University of Alberta

Human-Animal Bonding: An Investigation of Attributes

By

Eunice E. Johannson ©

A thesis submitted to the Faculty of Graduate Studies and Research in partial fulfillment of the requirements for the degree of Doctor of Philosophy

in

School Psychology

Department of Educational Psychology

Edmonton, Alberta

Spring, 1999

National Library
of Canada

Acquisitions and
Bibliographic Services

395 Wellington Street
Ottawa ON K1A 0N4
Canada

Bibliothèque nationale
du Canada

Acquisitions et
services bibliographiques

395, rue Wellington
Ottawa ON K1A 0N4
Canada

Your file Votre référence

Our file Notre référence

The author has granted a non-exclusive licence allowing the National Library of Canada to reproduce, loan, distribute or sell copies of this thesis in microform, paper or electronic formats.

L'auteur a accordé une licence non exclusive permettant à la Bibliothèque nationale du Canada de reproduire, prêter, distribuer ou vendre des copies de cette thèse sous la forme de microfiche/film, de reproduction sur papier ou sur format électronique.

The author retains ownership of the copyright in this thesis. Neither the thesis nor substantial extracts from it may be printed or otherwise reproduced without the author's permission.

L'auteur conserve la propriété du droit d'auteur qui protège cette thèse. Ni la thèse ni des extraits substantiels de celle-ci ne doivent être imprimés ou autrement reproduits sans son autorisation.

0-612-39548-0

Canada

University of Alberta

Library Release Form

Name of Author: Eunice Elaine Johannson

Title of Thesis: Human-Animal Bonding: An Investigation of Attributes

Degree: Doctor of Philosophy

Year this Degree Granted: 1999

Permission is hereby granted to the University of Alberta Library to reproduce single copies of this thesis and to lend or sell such copies for private, scholarly, or scientific research purposes only.

The author reserves all other publication and other rights in association with the copyright in the thesis, and except as hereinbefore provided, neither the thesis nor any substantial portion thereof may be printed or otherwise reproduced in any material form whatever without the author's prior written permission.

April 12, 1999

Eunice E. Johannson

Eunice E. Johannson
1118 68 Street
Edmonton, Alberta
T6K 3K4

University of Alberta

Faculty of Graduate Studies and Research

The undersigned certify that they have read, and have recommended to the Faculty of Graduate Studies and Research for acceptance, a thesis entitled Human-Animal Bonding: An Investigation of Attributes submitted by Eunice Elaine Johannson in partial fulfillment of the requirements for the degree of Doctor of Philosophy in School Psychology.

Dr. J. Paterson

Dr. H. Janzen

Fern Snart

Dr. F. Snart

Dr. L. Stewin

Dr. W. McVey

Dr. J. Derevensky

Date: Apr 7/99

This thesis is dedicated to the Lord Jesus Christ, the members of my family, and all the wonderful pets I have been blessed to share life with. **In loving memory to my father Arni**, who taught by example and cared well for animals. You taught me so much, especially respect for life and other Christian values. **Also my grandparents, especially my maternal grandfather Helmer,** who found such joy in his canine companions. Thank you for the spirit of joy, humour, and playfulness. **To my mother Lil,** who enjoys a bond with a special canine companion and is ever inspiring, encouraging, and supportive. Thank you. You are truly the most wonderful person I know. Your constant support even as you face your own tremendous challenges is a model of courage, character, and unconditional love. **To my sister Rita** who shares my love of pets, has many of her own, and whose love and friendship is invaluable. Thank you for always being there for me, encouraging, supporting, and helping me to keep things in perspective. I feel blessed to have you as my sister and friend. **To my nephews Milton and Jason** who have grown up in a pet loving family, and who are sensitive, respectful, responsible, and playful as a result. Thank you for being the wonderful young men that you are and for the love, interest, and support you give me. **This thesis is also dedicated in loving memory to pets I have enjoyed. Rambo, Babe, Trish, Curly, Skitty, Tex, Tiny, King, Buster, and Gypsy** each with their unique and special character contributed to my personal development and growth. **To my current canine companions, Banjo the Beagle and Dexter the Pointer.** You show me patience and unconditional love. Your sensistivity and intelligence amaze me. You give me joy. Your mischief makes me laugh, and your cuddles are a comfort.

Abstract

This study used the triangulation approach to examine the nature of relationships between people and their family dog. The objective was to gain insight into the attributes of human-animal bonding. It investigated whether evidence of human-animal bonding might be revealed in the thoughts, emotions, and behaviors reported by participants and observed by the researcher. In-depth case studies were conducted with twenty children and their family dogs. The children selected were between the ages of eight and eighteen, from a Western Canadian city (Edmonton, Alberta), with possession of their family dog for at least one year. The author developed and used a questionnaire, semi-structured interview and behavioral observation cue list to obtain the childrens views and learn more about their relationships with their family dog. Analysis of the interview and behavioral observation material was conducted by developing a matrix for display and matching of patterns. To evaluate potential usefulness of the questionnaire a sampling of 92 participants (children and adults) was added following completion of the case studies. Based on correlational and factor analysis, results suggested nine factors for grouping the characteristics of human-animal bonding. Further analyses revealed human-animal bonding to be a multidimensional phenomenon, characterized by emotional-psychological, social, behavioral, and commitment dimensions. Results of the study are discussed in relation to theory on human attachment and bonding and its relevance to understanding and advancing knowledge of the human-animal bonding phenomenon. Findings of this study indicate implications for further research and application in the areas of school and counselling psychology.

Acknowledgements

A special thank you to Dr. John Paterson for his gentle encouragement and advice. Also, Dr. Henry Janzen for advice, constructive criticism, and support throughout my doctoral program. To Dr. Fern Snart for her helpful suggestions particularly in the areas of research methodology and statistical analysis, as well as her availability, and encouragement. Dr. Len Stewin for stimulating discussion in the area of attachment and bonding, and his ongoing support of this thesis. Dr. Wayne McVey for his encouragement and advice, especially in regard to research methodology. Dr. Jeffrey Derevensky for his thorough review of the thesis and valuable recommendations.

Dr. Marilyn Hodgins who was exceptionally encouraging and provided helpful expertise in the midst of her own very busy schedule.

Dr. Norman Brodie for his ongoing interest and advice, and his son Michael who provided assistance in organizing the initial statistics.

Jason Kelly who from the beginning provided inspiration and support and was always readily available to share his expertise and knowledge especially in the areas of computer operation, software programs, and statistics.

Marianne Maretz for her expertise in reviewing the thesis, and her ongoing encouragement.

Mel and Bob Winnick who are like special angels in their daily care for my pets, and who made it possible for me to complete the research and work at the same time. Their friendship, support and encouragement has been invaluable.

Gloria Braaten for motivating me through her intriguing internet research and especially for being a wonderful friend.

Linda Koyich for her continual interest in the project, help in keeping perspective through her sense of humour and ongoing reassurance.

Brenda Jackson for her constant support, and practical assistance with data collection.

The children and their parents who welcomed me into their homes and gave of their time to participate in the study.

The staff at Petsmart on Calgary Trail, Dr. Konschuh and staff at Millwoods East Veterinary Clinic, Psychologists and staff at The Triune Group, Dog Trainer Colleen McLaughlin and the Sherwood Park Dog Obedience School, all of whom helped with the data collection, as well as the children and adults who completed the questionnaires at these venues and when canvassed.

My fellow Directors and members of the Northern Alberta Pet Therapy Society for their input in the initial stages of the project and later understanding of my need for a leave of absence to enable completion of this research.

Table of Contents

Chapter I

Introduction 1
- General Statement of the Problem 1
- Significance of the Study 2
- Theoretical Framework for the Study 5
- Research Questions and Hypotheses 8
- Scope 10

Chapter II

Review of the Literature 12
- Introduction 12
- Assessing the Bond 13
- The Literature about Animals as Therapeutic 15
- Pets and Children who have Special Needs 16
- Human Bonding and Attributes of Parent Child Bonding 19
- Bonding Between Humans and Animals 25
- Concluding Comment 27

Chapter III

Research Method 29
- Research Design 29
- Development of Protocols 32
  - The Questionnaire: (PAWS) 33
  - The InterviewGuide 35
  - The Behavior Observation Cue List 37
  - The Pilot Study 38
- Selection of Participants 39
  - Participants for the In-Depth Case Studies: Phase One 39
  - Participants for Further Exploration of theQuestionnaire 39
- The In-Depth Case Studies: Phase One 41
- Exploration of the Questionnaire's Potential: Phase Two 43
- Method for Analysis of Material 43
- The In-Depth Case Studies: Phase One 43
  - Interview Material and Behavioral Observations 43
  - The Questionnaire 44
- Exploration of the Questionnaire (PAWS): Phase Two 46
  - Method for Combined Analysis 47
- Research Questions and Hypotheses 47

Chapter IV

Results 50
  Introduction 50
  The In-Depth Case Studies: Phase One 50
    Participant Characteristics 50
    Emergent Themes 52
  The Emotional-psychological Dimension 54
    The Interviews 54
    Observed Behaviors 60
  The Behavioral-physiological Dimension 63
    The Interviews 63
    Observed Behaviors 67
  The Social Dimension 68
    The Interviews 68
    Observed Behaviors 71
  Commitment 72
    The Interviews 72
    Observed Behaviors 75
  The Questionnaire (PAWS) 77
    Sample Characteristics: All Participants 77
    Results from the Questionnaire 80
    Reliability of the Questionnaire 80
    Factor Analysis 81
    Combined Results 86

Chapter V

Discussion

  Introduction 90
  The Attributes of Human-Animal Bonding 90
  Themes Representative of Bonding 91
    The Emotional Dimension 91
    The Behavioral Dimension 93
    The Social Dimension 95
    The Commitment Dimension 96
  Levels of Attachment 97
  The Questionnaire as an Assessment Instrument 98
  Importance of the Method of Inqquiry 99
  Practical Implications 101
  Theoretical Implications 105
  Conclusions 109
  Limitations of the Study 111
  Suggestions for Future Research 111
  A Personal Note 113

Bibliography 115

Appendices

Appendix A

Questionnaire 125

Appendix B

Interview Guide 128

Appendix C

Behavior Observation Cue List 129

Appendix D

Sample Letter of Introduction 130

Appendix E

Consent Form 131

Appendix F

Item Reliability Coefficients for PAWS 132

List of Tables

Table 1. Sample Characteristics: Case Studies 51

Table 2. Sample Characteristics: All Participants 79

Table 3. Factor Loading and Factor Structure for the Questionnaire (PAWS) 83

List of Figures

Figure 1. Human-Animal Bonding as Multidimensional 89

Chapter I

Introduction

General Statement of the Problem

This study proposed to examine attributes of human-animal bonding and explore ways of assessing the phenomenon. Pursuit of such a measure can be compared, both in the need for explanation and in the search for representative characteristics, to previous research addressing similar constructs. Analogous research includes the development of inventories and scales to measure self-esteem, values, interests and the related attitudes of humans. Prior to development of the scales and inventories, social scientists, educators and others were aware the phenomenon existed and affected humans in various ways, and that this was likely dependent upon a variety of factors. Similarly, the nature of research attention focussing upon the human-animal bonding phenomenon appears to have originated with reports of positive relationships, followed by various methods of observation, and studies across a number of different settings. It is clear to the researcher that at this point in the process of advancing knowledge about the phenomenon there is a need for common terminology, definition, and methods for identifying attributes of human-animal bonding. A review of the literature indicates that knowledge of these attributes, development of theory, and a method of assessment, is timely and relevant in advancing the benefits of the human-animal bond.

A number of researchers have been involved in applied intervention studies investigating the effect of pet facilitated therapy among psychiatric and geriatric populations (Corson, Corson, Gwynne, & Arnold, 1977; Goldmeier, 1986; Robins, Sanders, & Cahill, 1991; Schantz, 1990). The methods employed in these studies were largely of an observational or survey nature. A National Institutes of Health report after reviewing the literature on the topic indicated that these studies were often methodologically flawed or were incomplete reports (National Institutes of Health, 1988). However, the authors were able to conclude that the pet programs have proven superior in producing psychosocial benefits when compared with other programs such as arts and crafts, friendly visitor programs, and conventional psychotherapy. Characteristics of the relationships noted from these and other observations in the literature are integrated with the current researcher's experiences to determine whether there are attributes that can be identified and developed into a scale of measurement to be used in further research, program development, and evaluation endeavors.

Significance of the Current Study

Examination of the literature suggests that much of the research to date has been conducted for program evaluation purposes (Draper, Gerber, & Layng, 1990; Redefer, & Goodman, 1989; Schantz, 1990; Wilson, 1991). The possibilities for using, facilitating, and maximizing the human-animal bond have increasingly gained the attention of researchers and professionals across a variety of disciplines over the past decade. Governmental agencies have also become involved in supporting research and making use of findings. In 1987, a working group under the auspices of the United States National

Institutes of Health drafted a synthesis of the current state of knowledge and a framework for future research to facilitate informed decisions regarding health benefits of pets (National Institutes of Health, 1988). It was noted that animals have been important to humans throughout history and were incorporated into the treatment for patients with mental illness at York Retreat, England as early as 1792. This was apparently implemented in an attempt to "reduce the use of harsh drugs and restraints" (NIH 1988, p. 1). The earliest use of animals in a therapeutic setting in the United States was reportedly in 1919 at St. Elizabeth's Hospital in Washington, D.C. In this instance dogs were used as companions for residents in psychiatric care. NIH research suggests that involvement with pets is beneficial to child development as well as for the health of persons in medical, rehabilitation, geriatric, and psychiatric care.

According to a Kansas State University news release, Robert Poresky associate professor of Family Studies and Human Services recently reported that added to a well-established home life, a relationship with a pet can improve a child's cognitive and social development (KSU, 1997). He commented, "generally we see some increases in IQ scores and measures of cognitive functioning, and if we look at something called empathy, the understanding of other peoples' feelings, children who interact with pets score higher on our measure of empathy"(KSU 1997, p.1). His observations included that "Generally it's those pets who respond...come over when you're sad, and sort of snuggle up and say 'it's OK', ...the type of pets who provide reassurance. It's this type of interaction that seems to be the key factor in boosting cognitive development and empathy, not just having an animal in the home"(KSU 1997, p.1).

Some of the more recent research involves epidemiological studies (Raina, Walter-Toews, & Bonnett, 1996). There appears to be a surge of interest (perhaps fueled by shrinking health care dollars) in obtaining objective and credible data for program development and evaluation purposes. Demographic, economic and political implications are seen in this as well, in that as the majority of a population ages and tax funded dollars for services decline, alternatives to traditional health care are sought. The potential for use of pets as an adjunct to care is being examined. This applies to prevention, rehabilitation, and long-term care. Implications can be seen for various disciplines, particularly in education where budgets and resources are increasingly limited for addressing special needs. Thus it is timely for research into the nature of human-animal bonding and the potential benefits to human functioning across a variety of areas.

Individuals already bonded with their pet recognize the benefits and value their pets as priceless. However, it is predicted that funding sources for research and future programming will require analysis from the perspective of cost-benefit. Consequently, it is imperative to clearly describe and accurately and consistently measure the attributes of human-animal bonding. This is of significance for researchers, program developers, and evaluators who seek to predict its occurrence in order to measure the outcomes. It is also important for therapists and others in their efforts to facilitate this phenomenon and maximize its benefits. The difficulty at present, as researchers studying this aspect have noted, is that various terms are used interchangeably when in fact they represent description of different features. This of course has implications for the observed effects and whether potential is recognized or appropriately used. Additionally, while there have been some attempts at development of scales of measurement reviews suggest that the studies have either been methodologically flawed, or difficult to replicate due to lack of complete information in the report (NIH, 1988; Poresky & Hendrix, 1990; Wilson, 1991).

Theoretical Framework for the Study

The theoretical framework which underlies this study is based upon concepts relating to emotional bonding or attachment among humans. From the beginning moments of life, humans have an inherent need for close relationships which are meaningful and satisfying. It is in essence a need to perceive and feel an emotional bond with a significant other. The process and benefits associated with this phenomenon are documented in the research literature addressing mother-child or parent-child attachments and emotional bonding.

The landmark work of Bowlby (1952) in infant psychiatry provides important background for the study of emotional bonding. Through this research the significance of mother-child attachment was documented as crucial to the child's emotional well-being. The concept of attachment has been defined as "a lasting emotional tie between people such that the individual strives to maintain closeness to the object of attachment and acts to ensure the relationship continues" (Fogel & Melsom, 1988). Klaus & Kennel, (1982) expanded the early findings about mother-child bonding to include both parents. Ainsworth (1962) advanced the state of knowledge in this area with a study on the effects of maternal deprivation. Erickson (1964), in his work on the child's development of trust versus mistrust in the developmental stages of childhood, linked emotional bonding with its outcome (ability to trust). There appears to be a parallel between these findings from theories about human to human emotional bonding and observations of relationships between humans and pet dogs.

Like humans, domesticated animals such as dogs are also seen to have a need for emotional bonding. Indeed as in the human situation, when a healthy psychological climate exists they appear to go through a comparable learning process as puppies and develop the ability to trust and establish an emotional bond with significant others. This includes both relationships with other dogs and humans. In the animal sciences dogs are referred to as pack animals. The pack family appears to have dynamics similar to that of the human family. The consonant need for and ability to form an emotional bond as seen both in humans and dogs leads to consideration of the potential for reciprocal and mutually beneficial relationships.

The current research is based upon the ethological framework of attachment and related theories (Ainsworth, 1969; Bowlby, 1958). Within this framework, an index of attachment as measured in young children is the tendency to maintain proximity to the attachment object. Even as the child grows older he or she acts to maintain the relationship by thinking about the object of attachment, initiating interaction, and expressing affection. As an extension of this, the current research examines the reported thoughts about the family dog, time spent together (voluntary, quality interaction in activities), expressions of affection, and in the case studies observes the features of physical closeness to obtain an estimate of the tendency to maintain proximity to the attachment object (dog).

Another component of attachment as seen in the definition is the motivation of the attached person to sustain the relationship. This might be expressed by interest in and emotional feelings about the attachment object. An index of this is the attachment object's ability to reduce stress, as shown for example in the reunion phase of the 'Strange Situation' (Ainsworth, 1979), the measure most commonly used to assess infants attachment to family members and significant others. While Ainsworth's measure is not used in the present study, the research does examine related features such as participant reports of psychological comfort and relaxation obtained from their relationship with the attachment object (i.e., dog).

Attachment theory also suggests that children form an internal working model of every attachment relationship (Bowlby, 1988; Bretherton, 1985). The model includes ideas and feelings about the relationship which are mentally stored as representations. These mental representations then are cognitively available to the child even when the attachment object is absent. Because the ideas and feelings about significant relationships are mentally stored, they are available not only for recall but also for generalization to other instances of relationships. For example the internal working model of the mother-child or father-child relationship is transferred into adulthood and when that child becomes an adult, this cognitive model provides the initial ideas for the parent role in relationship to his or her children. The nature of the internal working model of children and adults in relation to their family dog remains unknown. Descriptive study of the ideas children have about the family dog and their ways of relating to him or her merit attention. It is possible that the child might develop an internal working model which stems from and includes representations associated with loving and nurturing the family dog. This could provide a frame of reference for their later role as a parent or caring adult.

According to attachment theory, a bond can be defined operationally by observing the behavior of the child in relation to the attachment object during interaction and following a stressful event (e.g., separation). Behaviors such as maintaining proximity to the attachment figure, smiling, approaching, touching, and being calmed by the attachment figure when under stress are all considered indices of attachment or bonding in human relationships. The degree of attachment is inferred from multiple patterns of such behaviors. According to Melson (1990) methods for observing such behavior might be microanalytic or macroanalytic. The microanalytic approach measures objectively defined behaviors such as looks, smiles, and verbalizations, in real time to obtain information about the frequency and duration of behaviors. It provides a precise measurement of the degree to which a child's behavior is contingent upon and responsive to the animal. These measurements are without regard for the motivation, purpose or contextual meaning of the behavior. Alternatively, the macroanalytic approach allows the researcher to capture the qualitative meaning of the behavior. With this approach the researcher might code sequences of behaviors in terms of "context, motive and goal as judged by the observer" (Melsom, 1990). As such, the latter approach appears well suited to the in-depth case studies of the present research into human-animal bonding.

Research Questions and Hypotheses

The research problem pertaining to identification of the attributes of human-animal bonding is multi-faceted. Firstly, are there patterns of thoughts, emotions, and behaviors, both reported as observations in the literature and to be discovered in the current process which can accurately be determined as representative of the bond between humans and their family dogs? Are some patterns more likely to be identifiable as necessary criteria for the bonding experience? It is hypothesized that as in human bonding, greater emotional attachment (bonding) would be observed where there is a history of the person attending well to the dog and being committed to the dog. This might include both reported and observed indicators suggesting that the dog and child are sensitive, receptive, and responsive to each other. Also considered suggestive of bonding might be expressed views such that the relationship is perceived as mutually rewarding. Activities related to caring for the pet would likely reflect the person's sensitivity and responsiveness. However, this aspect raises two issues. One is that research in this regard involving children is limited by variable parental expectations and training around the child's activities or responsibilities to care for the dog. The second consideration is that dogs might view their human family much as they might others in a pack, considering adults as the primary care-giving leaders, and children more as siblings.

As readers who have experienced the dynamics related to having a dog in the family home will no doubt be aware, the dog relates differently, and often has unique expectations of the different family members. Although the researcher believes that care giving is an important aspect of the bonding phenomenon, it might not be a necessary factor in bonding across all types of relationships. One could speculate that a dog might be sensitive to and simply accepting of the various capabilities and limitations of those in their environment. It is beyond the scope of the current research to examine this aspect in detail, but is noted because it is a commonly included feature in the literature on bonding (especially parent child).

This study focusses upon extrapolating and building upon the hypothesized characteristics of the human-animal bonding phenomenon, and advancing a theoretical as well as practical definition which is consistently representative of human-animal bonding. A primary objective in this research is to determine if evidence of human-animal bonding might be expressed in the thoughts and emotions of the person as well as in the behavioral interaction between person and animal. Also explored is the question of whether these reported experiences and behavioral observations offer potential for future assessment of the phenomenon. Both the qualitative process of in-depth examination of individuals lived experiences, and quantitative approaches to measurement and analysis are used to identify attributes of human-animal bonding. In this manner the method of triangulation is applied, with the intent of enabling the quantitative data to validate the qualitative research findings and the qualitative aspect to enhance or add depth to the quantitative.

Scope

The conceptual framework distinguishes dimensions of the human-animal bonding phenomenon, particularly as understood from the perspectives of the children and described according to emergent themes from the case studies. Questions addressed overall in the study include:

(1) What is the nature of the relationship children and adults have with the family dog?

(2) Are there patterns of thoughts, behaviors, and emotions that are identifiable as representative of human-animal bonding?

(3) What are the attributes of the bonding between children and the family dog?

(4) What methods appear best suited for assessment of human-animal bonding?

The in-depth case study research and analysis includes use of a questionnaire, a semi-structured interview and a behavior observation cue list. The questionnaire is employed to explore the nature of the relationship between a child and the family dog. The semi-structured interview is designed to provide more depth of information about the relationship, and the behavior observation cue list is used to examine the interaction between child and dog for features representative of bonding. Children selected for the in-depth case study were between the ages of eight and eighteen. The second phase of the study involved further exploration of the human-animal bonding phenomenon and examination of the questionnaire's potential as an assessment instrument. For these purposes, both adults and children were included as subjects. The latter subjects did not undergo in-depth case study. The samples for phase one and two were drawn from within middle and upper middle class communities in and around a western Canadian city (Edmonton, Alberta), and represent samples of convenience.

Chapter II

Review of the Literature

Introduction

In reviewing the literature, it became apparent that understanding the phenomenon of human-animal bonding was inextricably linked to appreciation of the benefits obtained from the interactions or the relationship which developed. Considerable anecdotal literature exists regarding the physical and psychological benefits of human-animal bonding (Corson et al., 1977; Goldmeier, 1986; Humeston, 1983; Paterson, Blashko, & Janzen, 1991; Robins et al., 1991). A common theme in both anecdotal and research literature was that when humans were given regular opportunities to interact and form relationships with pets such as dogs, certain psychological and physiological enhancements were observed to occur within the individuals (Arehart-Treichel, 1982; Draper et al. 1992; Dyson, 1992; Levinson, 1980; Mallon, 1994; McCullough, 1986). The psychological advantages derived appear to be largely related to an increased self-confidence, a willingness to take risks, spontaneous communication (where this was previously absent or minimal), a positive sense of self-worth, joy, improved interpersonal relationships, an enhanced sense of personal competence, and general optimism (Goldmeier, 1986; Kehoe, 1990; Redefer & Goodman, 1989; Wilson, 1991).

Assessing the Bond

A number of recent studies have attempted to develop measures of the relationships between children and their pets. Some have used open-ended or unstructured questions to obtain information about children's attitudes or feelings. Kidd and Kidd (1985) conducted this type of study to explore various aspects including the degree to which the child loves the pet, misses the pet when separated, sees the pet as loving him or her, as well as behaviors such as dreaming about, hugging, kissing, touching, and taking care of the pet. Robin, Bensel, Quigley, and Anderson, (1983) used open-ended questions to explore why pets might be viewed as important to children. Other researchers have used projective or visual methods, which are considered less sensitive to the tendency in some individuals toward response bias through impresssion management. However, a noted disadvantage is that this type of instrument might also be more difficult to consistently interpret. Barker and Barker (1990) used the Family Life Space Diagram to evaluate the attachment of elementary school age children to their pets. On this measure, the child is shown a sheet of paper with a circle drawn in the centre representing his or her family and asked to place small circles representing himself or herself and other family members on the sheet. The placement of the circles inside or outside the family circle, and the distance between circles is measured. Emotional closeness of the child to the pet is inferred from the space between the self circle and the pet circle. Although not yet validated, this tool appears comparable to other projective measures used in psychological assessment such as the House Tree Person Drawings and the Kinetic Family Drawings and might have similar potential, particularly in working with young children or less verbally oriented persons. The Shipwreck Test (Shaefer, 1973) is a similar measure used to assess children's social regard for their families. On this measure, children are shown pictures of six family members, a pet, a friend, and a television set. With this instrument the child is to assign each picture to one of six numbered lifeboats in a shipwreck scene. Although not a measure of child-pet bonding, Shaefer's (1973) Shipwreck Test is an interesting measure addressing social protection or the degree of concern for the safety of others. It might be useful in assessing these aspects of human-animal bonding in children.

Another approach involves the development of surveys or scales to assess human-animal relationships. Most of the scales are a combination of items indexing feelings and thoughts with behaviors. Poresky et al. (1987) developed The Companion Animal Bonding Scale to retrospectively assess the closeness adults recalled having had with their childhood pets. It consists of eight Likert-type items measuring the degree to which the individual engaged in behaviors that might represent attachment. This Companion Animal Bonding Scale of course had the associated difficulties commonly found among retrospective studies, but might be a useful scale for comparison studies between childhood relationships with pets and those experienced in adulthood. The authors also developed a second measure, The Companion Animal Semantic Differential (Poresky et al., 1988), composed of nine bi-polar adjectives. Holcomb, Williams, and Richards (1985) in their research had also developed a Likert-type scale, titled The Pet Attachment Survey, which consisted of 29 positive and negative emotion items. However, due to the length and vocabulary in the statements the scale appears to be limited for use with children who are at least reading at a grade four level and of sufficient maturity to comprehend the items. Melson (1988) adapted items from the Companion Animal Bonding Scale and developed an eight item Pet Attachment Scale for Children. This was subsequently expanded to eleven items, and uses the 'structured alternative' format in an attempt to control for social desireability in response bias. On this measure, two kinds of hypothetical same age, same gender children are described to the child. In the description, the hypothetical child is noted to either be involving their pet in some activity (e.g., taking the pet on trips) or not, and the participant is to indicate which child is most like himself or herself, and then whether the hypothetical child is really like them or not. Scoring on this measure ranges from one to four for each item, with the latter reflecting a higher indicator. The reliability (Cronbach's alpha) was 0.50 on the first version and improved to 0.71 on the revised 11 item version. While each of these measures was found to have some merit, all appear to lack depth and breadth about the bonding phenomenon, a limitation perhaps related both to instrumentation and the parameters of the research methodology.

The Literature About Animals as Therapeutic

Most of the work that has been done in this area revolves around observations of the benefits seen among psychiatric populations and geriatric residents when they have been exposed to pet therapy, either formally or otherwise (Draper et al., 1990; Kehoe, 1990; Goldmeier, 1986; Humeston, 1983). In what is reported to be the first long-term epidemiological study to examine the impact of pet ownership on the ability of elderly people to perform routine daily activities, scientists in Guelph, Ontario have found that those who own pets such as dogs and cats tend to fare better in regard to managing daily living activities (Raina et al., 1996).

In reviewing literature on pet programs instituted at facilities such as hospitals and residences for senior citizens, it was noted that the terminology, and descriptions of behaviors was confusing. The term "pet therapy" might refer to situations involving pet visitations, ownership, attempts at milieu therapy, and attempts to use an animal as an active participant in psychotherapy, physiotherapy, or recreation therapy. This is problematic because it remains unknown how these different variables might impact upon a bonding relationship or perceived benefits. For example, there could be a difference in the impact upon an individual depending on whether the pet therapy involved pet ownership versus pet visitation. Pet ownership or having a family pet usually involves activities to care for the animal, requires self-discipline and responsibility, and demands that the individual care for another living being beyond himself or herself. There is also more opportunity for interaction on a regular basis.

Pets and Children who have Special Needs

The qualitative phenomenological research which provided the impetus for the current study was that advanced by McCullough, wherein he examined the nature of the relationship between children with physical disabilities and their pets (McCullough, 1986). McCullough concluded that pets in the family contributed significantly to the well-being of the child, providing certain conditions were met. These conditions encompassed factors such as accessibility of the pet to the child (e.g., a dog tied up on a leash in the backyard did little good). The more opportunities the child had to touch, pet, care for, and otherwise interact with the pet, the greater the benefit to the child. The characteristics of the pet in relation to the child were also seen as important. A good match between the animal's size, activity level and temperament, and the needs and abilities of the child tended to maximize the benefits.

Overall, a pet's value to the psychological well-being of the child was observed to be strongly related to its suitability to the situation and the household. The advantages to the child were found to include: the provision of companionship, a decreased sense of loneliness, development of a positive sense of self-esteem, greater independence of functioning, greater acceptance by others, and the development of family cohesiveness. For readers interested in child development and the phenomenon of human-animal bonding McCullough's work is stimulating, and prompts us toward recognition of a need to increase our understanding of the human-animal bond, and its application to therapeutic situations.

Findings from McCullough's (1986) descriptive exploratory study pose a number of possibilities for further investigation, particularly in the field of educational psychology. For example, if as McCullough observed human-animal bonding has positive implications for the psychological well-being of children, is it feasible that bonding with a pet might be helpful for children who are experiencing difficulties with learning in school? Literature in the area implies significance (Bloom, 1976; Blue, 1986; Hensel, 1991; Kidd, & Kidd, 1990; KSU, 1997; Melson, 1991; Nebbe, 1991; Poresky, & Hendrix, 1990; Rourke, & Fiske, 1981), and suggests the need for systematic study to substantiate the observations not only of McCullough and others exploring human-animal bonding, but for educators and therapists who might seek application for various purposes as well.

Except for a few researchers like William McCullough, most of the literature does not address potentially important variables such as differences pertaining to the type of animal, size, temperament (active, playful, versus passive, sedate), and the compatibility with the needs of the individual. It is hypothesized that these factors and the individual's involvement in choosing the animal he or she interacts with could make a difference in the outcome. However, the literature to date has not adequately dealt with these issues, and as Draper et al. (1990) noted, appears to lack the necessary controls for scientific research. This leaves many questions outstanding, and begs further investigation into the role, and effectiveness of pets as companions and therapeutic agents. We need to know why, how, under what conditions, and when this type of intervention would likely be beneficial. There needs to be attention to detail particularly in regard to the description of what might be considered independent variables (aspects which might impact the degree or nature of the relationship) in the research. Thus, it is of utmost importance at the outset that clear descriptions, definitions, and terminology be sought. More stringent methods of observation and data analysis are also needed in order to accurately identify characteristics involved in human-animal bonding. Although several attempts have been made to develop scales of measurement, the focus and intent of the studies and scales were found to vary from researcher to researcher (retrospective versus current; in home versus visits or therapy) and it appeared that replication studies were still required for validation purposes. As such, this aspect was part of the ongoing literature review and research for the current study.

The intent of the prevailing research is to expand upon our existing knowledge about human-animal relationships by examining reported and observed attributes, and exploring methods for assessment of bonding in such relationships. In order to do this, literature on the topic of bonding between parent and child and philosophy concerning bonding in general was also reviewed to provide a foundation for examining the related attributes in human-animal bonding.

Human Bonding and Attributes of Parent-Child Bonding

The concept of bonding has been explained within the context of various theories, including psychoanalytic theory, learning theory, and ethological theory. Each theory makes its own assumptions about the role of the infant in the development of bonding, the variables considered important for development of bonding, and the processes underlying the development of bonding. Instruments have also been developed to assess the relationship of attachment patterns to emotional adjustments and developmental histories of adolescents and adults (Lopez & Glover, 1993; Lyddon, Bradford, & Nelson, 1993).

According to psychoanalytic theory, parental caretaking activities which are essential for survival of the child (e.g., feeding) are critical in the formation of attachment. Within this view, it is postulated that the need for oral gratification when satisfied by the mother's breast leads to attachment to the mother's satisfying breast and ultimately to the mother herself.

Learning theorists also consider the feeding situation as important for the development of attachment (Sears, Maccoby, & Levin, 1957). According to this view, the caretaker acquires positive value through association with the satisfaction and reduction of hunger, a primary drive. The mother becomes paired with drive-reducing feeding activity, attains secondary reinforcement properties and as a result is valued in her own right. Eventually, just the presence of the mother becomes satisfying and the child develops a need for contact with the mother. This acquired need is referred to as attachment. However this rather simplistic early theory was challenged, with the most famous study being that of Harlow and Zimmerman (1959) in their research with cloth and wire surrogate mother monkeys. Their results indicated that the infants preferred cloth 'mothers' despite the fact that they obtained their food from the wire 'mother'. Some learning theorists suggest that the visual, auditory, and tactual stimulation provided by adults in the course of their daily interactions with the infant furnishes the basis for bonding (Gerwitz, 1969). As a result of regular and satisfying stimulation by specific individuals, these individuals are valued by the infant and become objects of attachment. In the learning theory explanation, attachment is seen not as an innate or instinctual process, but rather as something which develops over time in relation to satisfying interaction with key people in the child's environment. Thus, bonding is seen as a reciprocal process with parent and child developing attachment to each other.

Another theoretical view which emphasizes the reciprocal nature of the attachment process is ethological theory. This theory, influenced by evolutionary theory and observational studies of animals was advanced by John Bowlby (1958, 1969, 1973).

Bowlby suggests that attachment results from a set of instinctual responses which are important for the protection and survival of the species. The infant's behaviors (e.g., crying, smiling, sucking, clinging, following) prompt parental care and protection of the infant and promote contact between mother and child. The mother is biologically predisposed to respond to the infant's elicitors and the infant is equally predisposed to respond to the nurturance and stimulation she provides. Because of these biologically programmed systems, a mutual attachment develops. Bowlby minimizes the importance of the feeding situation and emphasizes the active role of the infant's early social signalling systems (e.g., crying, smiling). He accentuates the development of mutual attachment, and includes both parents in the formation of bonding with the infant. In reviewing these theories, the author questions whether early behaviors are biologically programmed, and is more inclined toward a combination of learning and ethological theories to account for the shifting role that different signaling systems play at various developmental stages. It appears most feasible that while a predisposition for attachment exists on the part of both infant and adult, certain signals or behaviors, the nature of responses to their repitition, and the experience of need satisfaction are intertwined in the attachment process. It is postulated that in development of a healthy attachment, the signaling systems change as each experiences the rewards of relationship with the other and as the various developmental milestones are achieved by the child. Bowlby's inclusion of fathers in the bonding picture is seen as a vast improvement over Freud's theory which appears at least partially limited by his paternalistic vision of who the primary caretaker generally was at that point in time. Bowlby's emphasis on the importance of reciprocity in bonding is well taken, and might be extended to include more focus on the responsiveness and sensitivity of the care and the nature of interactions with the child as crucial to the attachment process. As well, it is generally accepted that infants form multiple attachments including mothers, fathers, siblings, and peers as the objects of attachment. Explanation for this might include that as the infant learns he or she can trust key people for appropriate responses to needs, and as he or she experiences play, joy, and new learnings in a positive environment, the infant reciprocates and feels safe to risk activities with and attachment to an expanding network of people. As the infant is more open, receptive, and social, this in turn invites greater attentiveness and the bond is strengthened.

Attachment theory (Bowlby, 1969) presupposes that humans are innately programmed to seek and form attachments with others. It assumes that the developing infant's early bonding-related experiences are, over time, represented cognitively as an internal working model of self and other. These models are postulated to function as prototypes for later social relations, affecting thoughts that bias the adult perception, information processing, and interpersonal behavior, producing schema-consistent experiences. It is assumed that the presence of such bonds promotes human development by providing people with emotional support, and a sense of closeness and continuity. As defined by Ainsworth (1989) attachment is "a close, enduring affectional bond or relationship between two persons." According to her description, the experience of comfort and security is unique to the bonded relationship and differentiates it from other types of relationships. Contemporary attachment theory emphasizes the association between positive, enduring emotional bonds and healthy human development.

Given the variety of theoretical foundations for the concept of attachment and the many psychometric instruments developed in recent years to measure the construct as applied to humans, a review of selected measures was undertaken. In the psychological literature on adult attachment, use of self-report measures (both retrospective and current perceptions) is common, though acknowledged as potentially subject to bias influenced by such constructs as the individual's mood, accuracy of recall, and current status of relationships (Kenny & Rice, 1995). However, a self-report inventory based on Bowlby's theory of attachment which appears relevant to the issues of the current research is the Inventory of Parent and Peer Attachment (IPPA) (Armsden & Greenberg, 1987). It provides separate assessments of the quality of parent and peer attachments in late adolescents and young adults. The theoretical basis for this instrument is the affective-cognitive dimensions of trust in the accessibility and responsiveness of attachment figures, as linked to general psychological well-being. The inventory has two continuous scales which are scored independently (Parent scale has 28 items, Peer scale 25). Factor analysis yielded partial confirmation of the notion of positive and negative affective-cognitive dimensions of attachment. There was also indication of the instrument's ability to differentiate healthy from pathological bonding with parents. It was noted to have moderate to high reliability. Convergent validity was also found between IPPA parent attachment scores and reported levels of family support, conflict and cohesiveness, and the tendency to seek parents in times of need. Peer attachment scores were found to have correlated highly with the Tennessee Self-Concept scale (Roid & Fitts, 1988). Subsequent research using the IPPA reportedly found that less secure parental attachment related to depression, suicidal ideation, separation anxiety, and hopelessness in young adolescents (Armsden et al., 1990). As well, Lapsley et al. (1990) discovered scores from this measure to be predictive of personal and social identity as well as academic, personal-emotional, and social aspects of college adjustment. A noted advantage of the inventory is that it is a continuous rather than categorical measure. Categorical measures tend to assess stability and introduce the potential for differential base rates that effect stability results, and can be influenced by external factors such as mood states. Two other self-report instruments, the Attachment Style measure (Hazan & Shaver, 1987) and the Relationship Questionnaire (Bartholomew & Horowitz, 1991) are categorical, with a limited number of items and noted to yield much lower and more inconsistent reliabilities of scores from the sampled subjects.

Another method of assessing bonding is the interview, usually requiring about an hour to conduct. A number of these have been designed. The Attachment Interview (AI) (Bartholomew & Horowitz, 1991) is a semistructured interview based on Bowlby's theory of attachment designed to assess four prototypes of attachment styles. The four prototypes include secure, preoccupied, dismissing, and fearful or avoidant behaviors. Individuals are rated on four nine point scales. Discriminate function analysis indicated that the interview ratings resulted in correct classification of 85 percent of the Secure group, 94 percent of the Fearful group, and 100 percent of both the Preoccupied and Dismissing groups. The 'Secure' prototype was described as having a capacity for maintaining close relationships, with 'Preoccupied' defined as overinvolved in close relationships, 'Dismissing' characterized by a downplaying of the importance of close relationships and restricted emotionality. The 'Fearful' prototype was noted to be avoidant of close relationships. The 'Preoccupied' and 'Dissmissive' groups showed difficulties in becoming close to and relying on others, but differed on measures reflecting an internalized sense of self-worth. The fearful style was consistently associated with social insecurity and lack of assertiveness. Through correlational analysis of the Family Interview, Peer Interview and a self-report questionnaire (Griffin & Bartholomew, 1994) convergent validity was demonstrated by moderately high correlations within each attachment dimension across methods (average within-dimension was .43).

From a review of the theories and methods for assessing attributes of bonding, it is noted that assessment of human-animal bonding requires thoughtful operationalization of the construct and a careful accounting of intervening variables. The use of self-report instruments requires a certain degree of respondent self-awareness, and can be subjectively disorted. Interviews appear to be a more sensitive measure. However, an important consideration in deciding to use the interview approach is the amount of time involved. The use of multiple methods has been recommended by some authors (Kafer et al., 1992; Scharfe & Bartholomew, 1994).

Bonding Between Humans and Animals

As noted, a prevailing theme in the literature is the tendency to see dogs as members of one's family. This is reflected in the way people talk about a dog regardless of whether he or she is a visitor, family member or therapeutic assistant. It is also evident from the way in which the dog is included in family (or facility) rituals or activities. There is also zoomorphism, which is when any species of animal attributing characteristics of their own species to another. This is seen not only across various species such as dogs in their 'play bow' to cats, but also in humans expectation of dogs (Butler et al., 1996). When humans attribute characteristics of their own species to dogs the type of zoomorphism is called anthropomorphism.

In a rather anthropomorphic book about dogs, Thomas (1993) writes that dogs themselves anthropomorphically imitate humans and share a number of human traits including loyalty, morality, romantic love, singing, smiling, family customs, status consciousness, weighing of alternatives, playing games, sharing and caring. Over time animals have been anthropomorphized in mythology, fables, cartoons, and advertisements (Berman, 1989; Sax, 1988; Tapper, 1988). The current proliferation of dogs featured in advertisements, human interest segments on the news, in books, movies, and magazines attests to increased interest and valuing of animal companions.

The relationship between people and dogs is speculated to have begun when our ancestors first encountered the wolf-like ancestors of our dogs. According to Cusack (1989, p.54) "the longest running bond and arguably the most varied and versatile one is the bond between dogs and people." He also noted that late nobel laureate Konrad Lorenz hypothesized these early dogs were likely lured by the warmth of the campfire and desire for scraps from the day's hunt. The dogs likely reciprocated by serving as aids during the hunt and guardians at night. At some point humans discovered that if ferral cubs were handled at an early age they became more docile and trainable, more willing to accept the human as the pack leader. Thus, the socialization process began as did the foundation for the human-animal bond. Evidence that the relationship is likely a very ancient one is also noted from an interesting discovery by Simon Davis of Hebrew University who in 1976 excavated a 12,000 year old tomb in Northern Israel to find a puppy skeleton clutched in the arms of a human skeleton (Cusak, 1989). According to Butler, Hetts, & Lagoni (1996) a century ago art critic John Ruskin in comment about the popularity of dog portraits by Edwin Lancier pondered that "There is in every animal's eyes a dim image and gleam of humanity, a flash of strange light through which their eyes look out and up to our great mystery of command over them and claims the fellowship of the creature, if not the soul."

Concluding Comment

A common theme in the literature is that dogs are good for people. They are seen as medicinal or therapeutic. They provide companionship. Dogs are both a source and a focus of affection. These characteristics are also viewed as instrumental in helping children develop a sense of empathic caring and responsibility. They are seen as having child-like features both in terms of physical appearance and behaviors (Butler, Hetts, & Lagoni, 1996; Voith, 1985). Their neotenic features (e.g., in many breeds large round eyes in relation to the size of the face, more rounded foreheads, muzzles which are shortened or squished in) are thought to evoke care-giving responses and contribute to our attachment to dogs, because we feel they are dependent upon us for their care. Sanders (1993) also noted that humans attribute to them characteristics of "mindedness" and see them as sharing our emotions. Given the parallels between the outcomes of human to human bonding and the reported benefits of human-animal relationships it is hypothesized that similar attributes are likely to be identified as representative of the bonding phenomenon.

The present study differs from much of the literature reviewed by using an in-depth case research approach which enables examination of the phenomenon and its detail within its natural setting. Additionally, while most of the literature focusses upon intervention with special needs populations and benefits of either pet visitation, animal assisted activities, or pet therapy, the current work does not. The researcher deliberately sought as participants those children who were more likely to be bonded with the family dog. The underlying reason for this focus is similar to that in defining the attributes of health, wherein rather than guaging it by its exceptions or dis-ease, health might be defined or guaged firstly by that which is usual, under 'average' or 'normal' conditions and by the ways it contributes to the functional capacities of the human or animal. Similarly, the present study takes a step back from reports of the exeptional circumstances (interventions observed as beneficial) and populations with special needs, in an attempt to identify typical attributes of healthy human-animal bonding which might occur within the natural or conventional milieu (family home). Healthy human-animal bonding for the purposes of this study would include relationships wherein the characteristics of the bond might be seen as contributing to the functional capacities of the person and animal.

Chapter III

Method

Research Design

This study grew from the questions and hypotheses which emerged after a review of research and other literature on the topic of human-animal bonding. It is based on a combination of learning and ethological theories. From ethological theory (Bowlby, 1969) but contrary to traditional learning theory (Sears, Macoby & Levin, 1957), it is assumed that both humans and dogs are innately predisposed to seek and form attachments with others. It is also assumed that both the child and dog's bonding-related experiences are over time somehow represented cognitively as an internal working model of his or her self and other. It should be noted that in making this assumption the researcher is aware there is no scientifically recognized measure of animal intelligence. The supposition is based upon personal and professional experience with dogs as well as the research and anecdotal evidence of the literature reviewed. It is also postulated that sufficient consistencies exist between human infant and family dog for parallel theory and assessment of the bonding phenomenon. Just as certain human infant behaviors prompt parental care and protection of the infant and promote contact between parent and child, it is presumed that a similar process occurs between family dogs and humans. The active role of the dog's social signalling systems (e.g., crying, showing excitement or joy) is considered important. In accordance with both ethological and learning theories, the bond is considered to be a mutual attachment between human and dog. Accentuated in this are the responsiveness and sensitivity of the human care and reciprocation by the dog through responsiveness and sensitivity toward the human. Consistent with learning theory (Gerwitz, 1969), the present research considers visual, auditory, and tactual stimulation by the human in the course of their daily interactions with the dog to furnish the basis for bonding. The researcher adds to this the concepts of comprehension and acceptance of the needs, nuances, and expectations of the other as well as good communication between human and animal. Contrary to learning theory (Sears, Maccoby, & Levin, 1957), the researcher places less emphasis upon the feeding situation as important for the development of attachment. Although satisfaction of hunger is recognized as a primary drive, this is not viewed as essential for human-animal bonding given that bonding has been observed to occur between dogs and individuals who are not routinely responsible for their feeding (e.g., residents in facilities, children). Regular, rewarding shared experiences are seen as increasing the value of each to the other. Consistent with learning theory, attachment is viewed as something which develops over time in relation to satisfying interaction. It is seen as a reciprocal process with human and dog developing attachment to each other. It is also assumed that the presence of the bond promotes growth and development in both children and dogs, with each providing the other with emotional support, a sense of closeness, security, and continuity. Consistent with Ainsworth (1989), the experience of comfort and security is viewed as unique to the bonded relationship, differentiating it from other types of relationships.

Various methods were considered as ways to access further knowledge about the phenomeon. Related tests by various authors (e.g., Armsden & Greenberg, 1987; Melson, 1988; Poresky et al., 1987), interview designs (e.g., Bartholomew & Horowitz, 1991; Kidd & Kidd, 1985; McCullough, 1986), and methods for behavior observation (Miller & Lago, 1990; Perelle & Granville, 1991) were reviewed and considered. Based upon their methodological limitations, it was ultimately determined that a variety of qualitative and quantitative methods combined might provide the most objective and in-depth material to address the questions and hypotheses. Thus, the study is phenomenological and descriptive, with a correlational approach to analysis of discoveries. It began with an in-depth case study approach, and evolved in the investigative process to include a blending of qualitative techniques with quantitative data collection and analysis, a method suggested by Gall and Borg (1996) as a way of enhancing the validity of case study findings.

As the case studies were the primary focus of the research, the blended methodology appeared appropriate, and it was expected that with this approach forms, types, and variations of human-animal bonding might be identified. The research began with development of instruments for use in the study, including a questionnaire, an interview guide and a behavioral observation cue iist. All three tools were used in the case studies, but in phase two only the questionnaire was used in order to further explore its usefulness as an assessment instrument. The research method is presented in the same manner in which it progressed, from development of instruments, to a pilot study, the in-depth case studies, and finally the focus on evaluation of the questionnaire with additional participants in phase two.

Development of Protocols

A letter of introduction (Appendix D, p. 130) and a consent form (Appendix E, p. 131) were prepared at the outset. Next, prototypes of the questionnaire, interview guide, and behavioral observation cue list were developed and then critically reviewed externally for the purpose of determining content validity. This review was conducted through consultation with experts in the fields of human-animal relationships, psychological assessment, and sociological research, who independently reviewed the protocols and literature summary. The three with expertise in human-animal relationships included a trainer, a breeder, and a pet therapy director. One from the field of psychology was a specialist in psychoeducational assessment, and the second was a psychologist specializing in therapeutic counselling with children. Consultation with sociologists included one who has expertise in applied research, and the other with qualifications pertaining to family systems and studies of relationships. They were found to be in general agreement that questionnaire items and other protocol matter were adequate and appeared appropriate for use in study of the human-animal bonding domain. Minor revisions were made to questionnaire items in accordance with suggestions. This was followed by pilot testing, with subsequent procedural modifications made in relation to questionnaire administration and the interview and observation process.

The Questionnaire: Person-Animal Wellness Survey (PAWS)

Similar considerations were taken into account in development of the questionnaire as would be for development of a test. This included defining the constructs to be measured and the target population, and reviewing related tests. As noted in the overall description of the protocol development process above, it began with development of the prototype, and evaluation and revision followed. For the purposes of this study, the construct of attachment was defined as a close, enduring affectional bond between human and dog. The target population would be children between the ages of eight and eighteen from middle and upper middle class families who were likely to be bonded with their dog. This sample would include firstly those known to the researcher with subsequent participants obtained through their referral to peers. Thus, the sample hypothetically consisted of 'probable bonded' participants, who were also for the sake of timeliness a sample of convenience.

In designing the questionnaire, the researcher took into account both the inadequacies and successes noted from review of related instruments. As noted by Gabarino (1998) some tests have proven inadequate due to having an insufficient number of items. According to Gall and Borg (1996) a questionnaire that assesses attitudes must be constructed as an attitude scale and should use at least ten items in order to obtain a reliable assessment of the individual's attitude. Because the hypotheses this questionnaire was to address pertain to the individual's attitude toward the dog, it was determined that an 'attitude scale' would be used to investigate participants' level of agreement or disagreement with various statements. The researcher generated thirty four items based on thoughts (12 items), emotions (10 items), and behaviors (12 items) which she felt might reflect bonding. Consideration was given to including items that would provide breadth and depth of information. Secondly, items of surveys and scales developed by others (Holcomb, Williams & Richards, 1985; Kafer, et al. 1990; Poresky, et al. 1987) were reviewed and compared for commonalities and differences in item content or intent. It was noted that a number of items generated by the researcher were similar to those of other surveys and scales in the literature (e.g., Companion Animal Bonding Scale; Pet Attachment Scale; Pet Relationship Scale; Inventory of Parent and Peer Attachment). For example, Kafer, et al. included items pertaining to missing the pet, talking with the pet (especially about things that bother or trouble the individual), pet sensitivity to human mood or emotion, which were similar to items generated by the researcher such as believing the dog understands, indication that it feels good to talk to the dog, and missing the dog. These similarities in items while somewhat different in content and coded differently by various researchers, suggested commonality in hypotheses and theories about the elements of bonding. Differences were also noted between the present focus and approach and those of other researchers. For example, The Companion Animal Bonding scale had a retrospective focus, dealt with behaviors, and included eight items.

Another consideration taken into account was the need to tailor the language and reading level to that of the target population. As well, an effort was made to provide brief, clear instructions for completion of the questionnaire. Questionnaire items were organized in logical sequence (similar content). Particular attention was paid to phrasing items in such a manner that the subject would be required to respond to a single idea rather than two separate ideas with a single answer. Finally, the researcher endeavored to avoid use of leading or biased questions.

The thirty four items which constitute the questionnaire designed for this study (Appendix A, p.125) are based upon thoughts, emotions, and behaviors suggested as reflective of human-animal bonding both as noted in the literature and generated by the researcher. The procedure used in measuring these attributes is a five point Likert scale, with participants' endorsement rating ranging from 5 on an item meaning strong agreement that a statement describes his or her relationship with the family dog (including related psychological and physical benefits) to 1 denoting strong disagreement.

Thought was given to the process of the case studies. It was determined that rather than beginning with interviews, the questionnaire would be introduced at the outset of the home visit. Administration of the questionnaire was viewed and treated similarly to instruments of a psychoeducational assessment wherein the clinician begins with a review of the overall objective of the evaluation and explains the task at hand. Participants were encouraged to request clarification if needed, and an explanatory and procedural covering page was also attached for their reference. This process enabled the researcher to approach participants in a more neutral manner, thereby laying the foundation for a good working rapport.

The Interview Guide

From the various features hypothesized to be relevant in human-animal bonding, a list was made of elements which appeared to merit further exploration through interviews with participants and their parents. Included were questions about the nature of the child's relationship with the dog, the impact the family dog might have on development of the child's self esteem, the possible connection between the child's experiences with the dog and his or her levels of felt competence (e.g., socially, academically). Fifteen questions were addressed to the child, and eight to the parent. Again, items were generated by the researcher, examined in relation to the underlying attachment theory of this study, and then compared to themes in the literature and items developed by other researchers (Bartholomew & Horowitz, 1991; McCullough, 1986). This comparison was made in regard to consistency with theory and general commonality across content.

The items were developed in a semi-structured interview format to serve as a guide for the interview process (Interview Guide, Appendix B, p.128). The semi-structured format was employed in order to provide focus and allow for probing more deeply as information emerged from questions and observations. The researcher considered use of a tape recorder for interview data, but determined in view of her skill in note-taking that the latter method would suffice and more importantly might be less intrusive than use of a tape recorder. The interview was conducted after participants had completed the questionnaire. Subsequent to this, corroborative information was also sought through a separate interview with the parent.

The interview method was viewed as a more sensitive measure than a questionnaire or survey, and considered vital to facilitating the desired breadth and depth of phenomenological and descriptive research methodology. As well, in considering the case study process, it was speculated that use of the interview method might simultaneously afford discrete opportunity for important observation of interaction between the child and his or her dog. Thus, the approach was phenomenological in the sense that the researcher investigated and described the subjective views of both the children and their parents. It was descriptive in that the material was obtained from both the interview conversations and the behavioral observations.

The Behavior Observation Cue List

A brief list of eighteen possible actions was used to cue (but not limit) observation of relevant behaviors during the home visit with case study participants (Appendix C, p. 129). Items included pertain to features considered by the researcher, and noted by others as suggestive of bonding in a relationship (McCullough, 1986; Miller & Lago, 1990). This encompassed eye contact, physical proximity, and behaviors suggesting affection and respect. The process of noting observed interaction began from the moment of contact or entry to the home. Again, although the use of technology (video camera) to review interactions was considered, it was ruled out in favour of the less intrusive method of short hand note taking.

In spite of the fact that the researcher has training and experience in test administration, interviewing, and the observation methods utilized in this study, it was arranged that another observer with background in sociological research would accompany the researcher on five percent of the home visits. The purpose of this was to have the observer provide commentary in regard to child-pet dog interactions. In the interest of rater reliability, and as a further check on quality of the items, both observations were then compared so that any differences might be addressed.

The Pilot Study

The initial phase of the study was a pilot project, which only differed from the in-depth case studies in not being age-specific. A sample of convenience was selected, with participants ranging from age five to adult. The adults and the parents of children were contacted by telephone to arrange a home visit. The purpose of the pilot study was to assess the research questionnaire, semi-structured interview and behavioral observation techniques prior to full-scale research.

A small variation reflecting inconsistency between questionnaire response and interview data was noted for the younger children (e.g., indicating responsibility for care inconsistent with parent report). It was also observed that the younger children (age five and eight) required assistance with comprehension of the questionnaire items. These factors suggested a need to be cognizant of the potential for attention to characteristics of participants which might suggest problems with reading comprehension and receptive vocabulary, as well as a caution around the reported experiences of younger children. Additionally, it was determined that the basal age for the case study participants would be eight years. Results from the pilot project were not included in the final data analysis, but rather the process served to test the protocols and guide the work of the in-depth case studies. Consequently from the pilot it was noted that prior to administration of the questionnaire parents should be asked about the child's progress in school (especially language arts), then as a brief assessment of reading comprehension the child would be asked to read two test items for the researcher and indicate his or her understanding of the question. The researcher would pay particular attention to corroberative evidence from the parent interview and behavioral observations. It was noted that this would be especially important for the younger children in the study, and might also be a factor for some older children with reading difficulties or a tendency to misrepresent involvement with the family dog (primarily over-reporting).

Selection of Participants

Participants for the In-Depth Case Studies: Phase One

Twenty individuals were selected for in-depth case study. These were children between the ages of eight and eighteen, who live in or near a western Canadian city, and who have had a pet dog for at least one year. The children volunteering for the study were a sample of convenience, from essentially middle and upper income families, and firstly those known to the researcher and then by referral. It was hypothesized that because of these characteristics, participants included were likely to be more highly bonded than a general survey would find.

Participants for Further Exploration of the Questionnaire's Potential: Phase Two

The evolving nature of this study allowed the opportunity to implement a second phase. This was completed in response to preliminary analysis of data from the case studies which suggested potential usefulness of the questionnaire as a method for assessing bonding. At this point issues arose in relation to the selection of subjects, how to acquire sufficient data within a short time period, and how to do so in a cost-effective manner. Considering that the purpose was primarily to explore usefulness of the questionnaire, the decision was made that for this phase participants would be obtained without age restriction. It was also determined that they might be accessed through a number of different venues. Further, it was deemed essential that subjects be provided with relevant background about the study and have instruction on how to complete the questionnaire, but without necessitating that the researcher be present at all locations simultaneously.

The first issues were dealt with by gaining access to venues with the potential of having a reasonably large volume of clientele who would be similar in characteristics to those of the case studies. This meant contacting venues and canvassing resources within relatively middle class neighbourhoods. The intent was to access to participants who were likely to have average or high average involvement with their dogs. Thus, while participants for the in-depth case studies had been obtained firstly through personal contacts of the researcher and then referrals from those contacts, the additional 92 participants obtained for questionnaire validation purposes were accessed through various sources. One venue was a large pet food and supplies specialty store, where the researcher set up a table to the side of the entry and invited customers to participate in the study by completing a questionnaire. To encourage participation, an attractive key chain with photographic insert (for a pet photo) was donated by the store and given out by the researcher as individuals completed the questionnaire. Other data collection resources included a veterinary clinic, a psychologist's office and a dog obedience instructor (who had her class of young people complete the questionnaires). As well, a research assistant solicited her contacts and neighbourhood and the researcher did the same. The reasoning behind this method of selecting participants is consistent with recommendations by Yin (1989) and Stake (1995) wherein the researcher seizes the opportunity to maximize what can be learned, knowing that time is limited and therefore the cases that are selected in addition to being appropriate for addressing the topic of interest, should be easy and willing participants.

The latter issue as noted above (provision of relevant background about the study and guidance on completion of the questionnaire) was accomplished by designing a poster type format on a brightly coloured cover sheet drawing attention to the study, and revising the 'Letter of Introduction' to omit the interview and observation components of the case studies. The researcher then purchased literature display holders and placed the questionnaires with the cover sheet and letter of introduction attached to each questionnaire in these holders and arranged with the venues and professionals involved to have them displayed. The 'Letter of Introduction' was also attached to the questionnaires distributed by the obedience instructor, research assistant, and researcher.

The In-Depth Case Studies: Phase I

Appointments for the home visit were arranged by telephone. At the beginning of the home visit after a brief conversational introduction, the Letter of Introduction with its reference from the researcher's supervisor and university was provided and discussed (Appendix D, p. 126). Also at this time ethical issues such as informed consent were addressed, including explanation of the form denoting agreement for participation and the request for parent or guardian's signature of consent (Appendix E, p. 127).

Following completion of the introduction and consent forms, the questionnaire was administered. This was done at the outset in order to provide a neutral point of focus, allowing opportunity for the children (especially those unfamiliar with the researcher) to develop a level of working comfort. As well, it afforded the researcher time to unobtrusively make note of any initial behavioral interaction which might have occurred. As indicated earlier, observation of interactions between the child and his or her dog began from the moment of contact or entry to the home and continued throughout the session. After the child completed the questionnaire, the researcher progressed to the interview. This was accomplished in a conversational manner, with attention to items of the Interview Guide. It should be noted as well that questions were asked and observations made in regard to the general functioning of both the child and dog, with a view to ruling out the possibility of differences in the bonding experience which might be due to dissimilarities in characteristics (e.g., physical capacities, temperament). Some other questions were asked of the parents to explore more subtle factors which might be connected to the child's relationship with the family dog. This included information about the number of siblings in the home and range of activities within the household. These questions were asked in order to assess whether any reported bonding or benefit might be attributed to the human-animal relationship, versus other factors not specific to the relationship. The overall intent was to discern from the questionnaire, interview, and observation data specifically those characteristics which would under ordinary circumstances accurately reflect a typical human-animal bonding relationship.

The phenomenological investigation of the qualitative method meant that at the end of the home visit the researcher was able to shift to a sharing or co-worker mode, briefly disclosing relevant information about her experiences with pet dogs and interest in understanding the nature and meanings around the human-animal bonding phenomenon.

Participants were invited and encouraged to share their experiences and insights to help the researcher with description and understanding. Comments from this portion were recorded as 'end notes', so they could later be evaluated for any difference in content when compared to earlier interview material. It was considered that while this type of disclosure and encouragement of the subject to 'join the researcher in solving the mystery' might yield more depth of information, it did constitute a change in the interview process, and therefore should be examined both separately and in comparison to the other material.

Exploration of the Questionnaire (PAWS) as a Potential Assessment Instrument: Phase II

In the second phase of the study the questionnaire was displayed at a pet food and supplies specialty store, veterinary clinic, psychologists office, administered at a dog obedience training school, and used by the researcher and a research assistant in community canvassing. By using this method, additional questionnaires were completed within a relatively short time, increasing the total number of participants who completed the questionnaire such that its potential for use as an assessment instrument might be further explored through statistical analysis.

Method for Analysis of Material

The In-depth Case Studies: Interview Material and Behavioral Observations

Data analysis began after the first case study. As the researcher attempted to make sense of the information it was initially coded under the categories of thoughts, emotions and behaviors, and later examined for patterns and themes. In doing this, the information obtained from interviews and behavior observations was firstly sorted to develop a matrix displaying participant comments and behaviors under the hypothesized categories. Relative importance of each of the attributes to overall bonding was analysed in accordance with simple frequencies in reporting or occurrence and significance indicated by participants. Initially the material appeared to align with the predicted categories of thoughts, emotions and behaviors. However as discussed later, the method of analysis changed after examination of the questionnaire at the end of phase two.

The Questionnaire

In order to evaluate findings from a quantitative perspective, the questionnaire was treated essentially as a scale for measuring bonding. For scoring purposes, negatively worded items on the questionnaire were reversed to reflect a response indicative of bonding in each case (items 7, 10, 17 and 26). Then characteristics of the participants and their dogs were examined from information obtained on the questionnaire. Data was summarized initially through the use of Excel 6.0 (Microsoft), and as complexity of the data later necessitated, through transformation to and use of SPSS, version 6.1 (SPSS, Chicago, Ill.). Preliminary analysis involved calculating the total scores, means, medians, and standard deviations both for participants scores on the questionnaire, and further analyzed by age and gender of participants and their dogs. Comparison of the mean scores on PAWS was also calculated for gender by using one-way analysis of variance.

Following this, an item analysis was conducted to determine the correlation between individuals' response to questionnaire items and their total score on the questionnaire. As such, item reliability or internal consistency was examined by using a split-half correlation coefficient (coefficient of internal consistency). This was calculated by splitting the test into two subtests, placing all odd-numbered items in one subtest, and all even numbered items in another subtest, with the resulting coefficient representing the reliability of half the test. Then the Spearman-Brown prophecy formula was employed to make a correction to the reliability coefficient so the reliability of scores for the entire test could be obtained. As a further measure of internal consistency or reliability, Cronbach's coefficient alpha was calculated to provide the average reliability that would be obtained from all possible splits of the test.

Evidence for validity of questionnaire score inferences about human-animal bonding was sought by examining evidence of content and construct validity. As noted earlier, content validity was explored through review of protocols at the outset. Supplemental indication from the coefficient of internal consistency was noted as well. Construct validity was addressed in the findings of the present research by assessing the questionnaire or scale's internal consistency, examining individual differences among participants in terms of their total scores and consistency of this with the qualitative data obtained (interview and behavior observation materials). In this manner, the methodology for gathering evidence about construct validity considered hypotheses about how individuals who possess different degrees of bonding are likely to report on their relationship with their dog, and how they might actually behave with their dog. The method was also incorporated in order to evaluate the extent to which inferences from questionnaire scores accurately reflect the attributes of human-animal bonding which the questionnaire (PAWS) was designed to measure. Additionally, information noted on the Behavior Observation Cue List served as a measure of external validity. For scoring purposes each item was assigned one point, with the potential scores for participants ranging from zero to eighteen. These were totalled to yield an overall score representing behavioral indicators of bonding. Correlations were calculated to enable comparison to the PAWS data. Subsequent to this, patterns which emerged from the interviews and observations of the 20 case studies were compared to the data from factor analysis on the questionnaire (which included results from all 112 participants). This method is presented at the end of phase two following a brief note about evaluation of the questionnaire.

Exploration of the Questionnaire (PAWS): Phase Two

The same process was used for scoring and analyzing the questionnaires of the additional 92 subjects. After this was completed, scores obtained by all participants (case study and phase two) were examined together. The purpose was to provide both an expanded exploration of the questionnaire as an analytical tool and to identify potential attributes of human-animal bonding. Toward this end, factor analysis was conducted to identify the underlying structure of items on the PAWS. A principal components analysis with varimax (orthogonal rotation) was conducted using SPSS version 6.1 (SPSS Inc., Chicago Ill.). Principal component analysis was utilized to transform the set of correlated variables with a set of uncorrelated variables (the components). The hope was that a much smaller number of these components would account for most of the variance in the original set of variables, and of course that meaningful interpretation of the components would be accomplished. Factor selection was determined based on Eigenvalues equal to or greater than 1.0 and an examination of the scree plot. Comparison was made of factors generated using Principle Components Analysis (orthogonal) and an oblique rotation was also conducted.

Method for the Combined Analysis

After analysis of this data the process of pattern matching was employed to determine whether the patterns noted from interviews and observations might be consistent with predictions drawn from theoretical propositions and the identified factors. From these patterns themes emerged which were subsequently developed into a graphic model of the attributes of human-animal bonding representing the revelations of this study.

Research Questions and Hypotheses

Are there patterns of thoughts, emotions, and behaviors to be discovered in the current process which can accurately be determined as representative of human-animal bonding? Are some patterns more likely to be identifiable as necessary criteria for the bonding experience? It is hypothesized that as in human bonding, greater emotional attachment (bonding) would be observed where there is a history of the person attending well to the dog and being committed to the dog, and this being reciprocated in some manner. Evidence might include both reported and observed indicators suggesting that the dog and child are sensitive, receptive, and responsive to each other. Also considered reflective of bonding might be expressed views to the effect that the relationship is perceived as mutually rewarding.

Activities to care for the pet, aside from being an assigned chore, would likely reflect the person's sensitivity and responsiveness. However, research in this regard involving children is limited by maturity of the child as well as variable parental expectations and training around the child's activities or responsibilities to care for the dog. It was also considered that dogs might view their human family much as they might others in a pack, viewing adults as the primary care-giving leaders, and children more as siblings. As noted earlier, dogs appear to relate differently, and often have unique expectations of the different family members.

Might information be gleaned through the reported experiences and behavior observations of the present study to expand knowledge about this? While care-giving appears to be an important aspect of the bonding phenomenon, is it a necessary factor in bonding across all types of relationships? One could speculate that a dog might be sensitive to and simply accepting of the various capabilities and limitations of those in their environment. It was beyond the scope of the current research to examine this aspect in detail, but because sensitivity and responsiveness in care giving is a commonly included feature in the literature on bonding (especially parent-child) it was included in the interview and observation material. Overall, questions addressed in the study include:

(1) what is the nature of the relationship children and adults have with the family dog?

(2) are there patterns of thoughts, behaviors and emotions or other features as seen among children which might be considered representative of human-animal bonding?

(3) what are the attributes of the bonding between children and the family dog?

(4) what method(s) is most effective for assessment of human-animal bonding?

With these questions in mind, the focus of this study was to increase understanding of the phenomenon through the reported experiences of research participants and the in-home observations of the researcher.

Chapter IV

Results

Introduction

This study sought to identify and gain understanding of the attributes of healthy human-animal bonding relationships, particularly those involving children between the ages of eight and eighteen and their family dog(s). It began with the 20 in-depth case studies, and evolved to include an additional 92 subjects who completed the questionnaire so that its usefulness as an assessment tool might be explored.

Recognizing there are many ways to arrange and present data, the researcher chose for simplicity to do so primarily in a manner commonly found in quantitative studies, with data arranged along the lines of frequencies in the findings. Information obtained from the in-depth case studies is presented first, followed by results from research on the questionnaire. The final section of this chapter reports on the patterns and themes obtained from the combined data of the in depth case studies and the 'questionnaire only' subjects of phase two.

The In-Depth Case Studies: Phase I

Participant Characteristics

Table 1 depicts characteristics of the in-depth case study participants and their dogs. As indicated 55 percent of participants were female, 45 percent male and they ranged in age from eight to eighteen. The average age of participants was twelve. The overall average score they obtained on PAWS was approximately 141 out of a possible 170 (SD=11.6). The children studied mostly had large dogs (75%) (according to the guide to standard breed weights, Waltham), with the average age of their dogs being about five years (SD=2.4). It was noted as well, that the number of dogs per child ranged from one to three.

Table 1. Sample Characteristics: Case Studies

	Total
Characteristics of the children	
Sample (n)	20 (100.0%)
Sex	
- Male	9 (45.0%)
- Female	11 (55.0%)
Age (years)	
- Mean (SD)	12.3 (3.4)
- Median	12
Number of Dogs	
- Range	1 to 3
- Median	1
Score on PAWS	
- Mean (SD)	140.7 (11.6)
- Median	143
Characteristics of the Dogs	
Sample (n)	24 (100.0%)
Age (years)	
- Mean (SD)	4.7 (2.4)
- Median	4
Size	
- Large	18 (75%)
- Medium	
- Small	6 (25%)

Note. Percentages may not equal 100 % due to rounding

Emergent Themes

The individuals stories are presented within the qualitative mode of analysis. Analysis is obtained from the identified themes indicated by participants responses. Interpretation of the themes is supplied in descriptive narrative or paraphrasing, with samples of the interview material. It should be noted that in choosing the analytic style, the researcher decided to report the results for each construct, theme, and pattern across selected cases that were studied to show how the construct, theme or pattern manifests.

Cases selected for presentation include those individuals with the overall highest and lowest levels of bonding, as well as three with varying levels of bonding and unique features that merit closer examination. This cross-case analysis is intended to highlight consistencies and differences in constructs, themes and patterns across the cases.

No significant physical disabilities were reported or apparent although one individual was noted to be a future candidate for cardiac surgery, and two indicated having asthma. Four children identified as having Attention Deficit Hyperactivity Disorder, and one was reported to have been diagnosed with learning difficulties and behavioral problems. Most of the participants indicated satisfaction with school, having friends, and being involved in activities they enjoyed such as sports or hobbies.

Information resulting from the interview material, behavioral observations, and questionnaire data was reviewed on a case by case basis to evaluate consistency of findings across measures. The data was also examined for patterns or themes suggested by subjects' responses. The constructs and themes identified from the matrix analysis are presented followed by interview segments and observational notes across cases.

Four themes emerged from the case studies. These were subsequently discovered to be consistent with the four dimensions obtained from the factor analysis, and are classified as follows:

Emotional Psychological/emotional
Meaning: emotional connection and emotional attachment associated with expressions of love, joy, comfort, relaxation, sharing. Feelings for and mediated by the dog, significance of the dog. A sense of companionship. Emotional reciprocity reflected in feeling understood by the dog and understanding the dog, attributing 'mindedness' and emotional sensitivity to the dog.

Behavior/Physical Care Physiological
Meaning: attentiveness to dog's nutritional needs, assuming responsibility to care for the dog, thoughtfulness in caring for another. Attentiveness to the dog's other physical needs (exercise, play), behaviors commited to care and the dog's sense of trust that he or she will be cared for. Consistency of care.

Social The social nature of the relationship between person and dog
Meaning: the dog as extension of the self such that any criticism or praise of the dog is an extension of the self/reflects on the self. This includes teaching or training - assumes and attributes to the dog intellectual abilities, personality characteristics, childlike characteristics. As a parent teaches and trains, the person teaches and trains the dog. Implications were noted for both person and dog in terms of emotional benefit (self-esteem, sense of mastery, confidence).

Commitment The long term nature of the bond; the philosophical aspect
Meaning: mutual benefit, the person cares for the dog, and the dog gives back; feelings of caring, empathy in regard to responsibility for the dog; self-worth - feeling needed by and useful to another. Mutual 'connectiveness' (connective

being similiar in use to medical application of the term as in connective tissue, representing close attachment of one to the other) between the person and the dog; love - unconditional and reciprocal. A high degree of involvement, with the dog at the centre of the person's interest and vice versa.

The Emotional-Psychological Dimension

A theme depicting emotional connection or attachment was evident from data obtained on the questionnaire, and is expanded upon through the interviews and observations of the twenty case studies. This theme of emotional connection or attachment was associated with joy, comfort, relaxation, and sharing in the relationship. It was seen in the individual's feelings for and mediated by the dog, and it underscores the significance of the dog in his or her life. In this there was also a sense of companionship. Additionally, when the emotional connection or attachment was strong, there was evidence of emotional reciprocity with the individual feeling both understood by the dog and understanding the dog, usually attributing 'mindedness' and emotional sensitivity to the dog.

The Interviews

An example of emotional connection or attachment is seen in the case of a male age 16, who has a four year old chow-cross dog and who indicated he likes to cuddle with his dog, enjoys having the dog sleep closeby on the floor in his room when he goes to bed, misses him a lot when away at school or otherwise, and views the dog as a buddy/friend. In reference to his dog, this young man observed:

> "He is happy when I come home...he greets me enthusiastically whenever I come in".

He also noted that:

> "In our home, dad is likely the primary person, but he (the dog) gets excited about me, especially when I come home from school or somewhere."

Additionally, he commented about having

> "...learned how a dog feels, like when he wants something."

He indicated seeing his dog as needing him, and that he feels responsible to care for his dog:

> "...he depends on me for food, brushing."

Analysis of the findings from the interviews of the case studies also suggests that the child's developmental level has an impact on how the child views and expresses their feelings of attachment. Among the younger children, emotional connection was reflected more on the level of play and the benefit of companionship through shared play activity, as seen in the comments of two younger children:

A nine year old male, who has a four and one half year old Boxer-cross dog commented:

> "We play-wrestle every day...lots of times in a day...I didn't do this before, it makes me feel good to play with her, she makes me happy."

Similar observations were made by an eight year old male, with a four year old purebred Retriever who reported:

> "We play together...I throw the ball for him, run with him...we do more in the summer. He's my buddy...my friend."

He also noted:

> "I like playing with him and going on family walks with him...going to dog shows. He makes me feel happy, ...I am usually pretty happy...helpful...friendly."

The psychological benefits and emotional attachment of this relationship was corroberated and expanded upon in his parents' comments that:

> "Especially before he started school when he was younger, he played and snuggled a lot with the dog. He is the sensitive one of the two boys, I think he found it nice to have the dog for a friend when the older child started school and he was very lonely. The dog helped, he would roll on the floor with him and play. Playing with the dog has helped him learn how to run fast, throw a ball more accurately and retrieve it before the dog as well."

It was noted that this child has attentional difficulties and hence associated problems with school, and the parents observed:

> "The dog helps boost his confidence. Also if he has a bad day, the dog won't turn him away...he'll seek out the dog on 'bad days' or if he is just not feeling well, or is feeling sad about something (e.g., school)."

Play, companionship, shared activities, and resultant emotional connection are also seen in the case of a twelve year old male who has the companionship of a seven year old Collie. He reported:

> "We play-fight every day, a lot. In the summer we run in the yard...we have fun."

The researcher's 'end notes' indicated that when probed about any further insights that might be helpful in understanding the bonding that appears to happen between people and their dogs, this young fellow was noted to have spontaneously responded with:

> "When a dog likes you, they sleep with you like mine do...they lay beside me, keep my feet warm...this makes me feel happy."

Feelings for the dog and efforts to understand the dog were also reported as essential in his observation:

> "What is important is getting to know the dog, playing with it, and seeing what it likes and doesn't like."

Psychological and physical benefits were noted in his parent's further elaboration on the development of their relationship:

> "He has learned kindness, respect, and about boundaries...he know how far he can push the dogs. His buddies have dogs too and they often get together with their dogs and play or go for walks. He has asthma and must use an inhaler, he became more comfortable with play and rough-housing because of the dogs, and this transferred to trying hockey and managing the contact stuff well...he also snowboards now. If he didn't have the dogs he would be bored."

Strong emotional connection or attachment is seen in the case of a thirteen year old female who has had her Labrador-Cross since it was a puppy. In this case although play is valued and noted as a shared activity, there is more depth and breadth to their relationship, as reflected in the following:

> "She cheers me up, I could have had a bad day at school or something and she just changes things because she likes to be happy, she accomodates to whatever mood I'm in. You can always approach her and she'll respond. I've learned about myself from her...that I can change my mood, that I'm not stuck, I can change focus. Her ability to help change my mood has taught me that."

Reciprocal affection and emotional benefit were also noted in:

> "She always gives me a good morning hug...and especially in winter she cuddles...these things get me going, get my day off to a good start."

The dog's consistency with an unconditionally loving and playful nature was reported as valued in:

> "No matter what is going on, she adds to whatever we're doing, she makes a game of things, plays, enjoys people, is happy, and makes me feel happy."

A strong emotional connection and feeling understood/appreciated by the dog, attributing mindedness and sensitivity to the dog were also featured in her observation that:

> "I play the piano, and if I even play one note she'll come from the other end of the house to be right with me at the piano...this makes me feel good...that she enjoys my music, she'll even come in from outside."

This young lady's parents commented:

> "She cares very much about the dog, even to the point of choosing Christmas gifts for her, and insists on getting something special for the dog on occasions when the dog has to be placed in a boarding kennel."

Her report about the closeness shared with her dog was corroborated and expanded upon by her parents, who observed:

> "She enjoys having the dog nearby when doing her homework. The dog lays at her feet, from time to time she talks to or pets the dog, and this seems to give her more stamina for the task. Her school achievement is very good, and has probably improved since having the dog."

What appeared to be a delayed bonding was seen in the case of a young lady whose mother and herself agreed that the dog was primarily bonded to the mother and secondarily to the young lady's brother. Although reportedly the relationship had grown between this individual and the dog over the past few years since the brother had left home as an adult and there was a strong element of empathy between the two, there appeared to be more an attachment of familiarity and care than depth and breadth to the relationship. A sense of delayed bonding was noted in her report that:

> "Besides my mom, she had initially gravitated toward my brother, then when he grew up and moved away the dog and I became closer."

However, attributing mindedness and sensitivity to the dog, and understanding the dog were also expressed, suggesting that despite a delay in the bonding, the relationship was now a closer one:

> "She'll tell me if she wants something, she actually goes to the fridge, sits there and looks longingly at it until I get her treats...if the family has a snack, she wants one too, especially since she has been getting older."

She also observed that her 12 year old Irish Setter:

> "sleeps more now, tires easily and lies down...we used to play ball in the backyard, and she really enjoyed playing in the water from the sprinkler."

In commenting about their relationship she noted:

> "I learned responsibility...and about companionship, especially if I was home alone I felt secure and not lonely, because I have her."

This young lady's parent verified the observations and added further insight into the sensitivity of the dog toward her daughter:

> "When our daughter was ill, the dog made a point of going to lay beside her, and would just stay with her, as if comforting her. She did the same thing when our son left home and our daughter was lonely for him...the dog would go and lay beside her or sit near her and want to be petted."

Attachment and the benefits of bonding are also seen in the case of a child who reportedly has significant behavioral and learning difficulties. Interestingly, although there were three dogs in the home at the time, he chose as 'his dog' the one which was the most docile, obedient, and gentle. This nine year old male, with an eight year old Irish Setter commented:

> "He sleeps with me, I decided that when I came here...he's cuddly."

Psychological benefits were noted in his observation that:

> "He helps me relax...I'd be bored without him...he's my friend and he likes me. He accepts my friends too."

The emotional-psychological benefits are well exemplified in his guardian's observations:

> "We've noticed an improvement in his confidence, especially with adults, which is related to his experiences with the dog, particularly in the area of training...he also knows he outshines the other kids in this one aspect. He was diagnosed as a 'slow learner' and has difficulties with his school work, so the success he enjoys with the dog is very important. The dog has shown him love, loyalty, and trust which has had an impact on his ability to do the same."

Observed Behaviors

The theme depicting emotional connection or attachment was also evident from notes on the Behavior Observation Cue List used by the researcher during the home visits. Examples of two highly bonded relationships are as follows:

> In the case of a nine year old male with a four and one half year old Boxer-Cross, the researcher noted that his interaction with the dog was certainly the most playful in the family. Differences in relationship were noted in the fourteen year old sister's interaction being more on the level of teaching, parenting, and enjoying the dog's responsiveness in that regard. While her level of bonding as measured on the questionnaire was also high, the nature of her focus was different. She initiated interaction through eye contact and hand signal for the dog to come to her and sit. The dog came and sat for about fifteen minutes while the young lady petted her (no small feat for a dog that otherwise did appear somewhat hyper). The twin brother also endorsed a substantial number of items suggestive of a good level of bonding, and again the nature or style of this differed from his siblings. He was a quieter fellow, less talkative, less physically demonstrative at least during the home

> visit. According to his parents, he is the one who gathers the dog's blanket for her at bed time, and kennels her when she is anxious around visitors. He also reported to the researcher that he enjoys cuddling with her and that if she became ill or died he would miss her, and commented that if something were to happen to her he would be very upset.

In the case of the sixteen year old male who has the companionship of a four year old chow-cross, it was noted that:

> This young man and his dog appeared to share a high energy level and yet a sensitivity to each other. Interaction between the two was frequently changing throughout the home visit. The dog would seek contact by running through the room, the young fellow would laugh and pet him as he went by. His tone of voice and manner of speaking with the dog depicted deep affection, and the dog responded similarly (vocalizing, smiling, happy, attentive).

An example of emotional connection more on the level of joy and sharing activities, but which appeared to lack the deeper sensitivity in other dimensions was seen in a male age 12, with a seven year old Collie and two other family dogs:

> It was observed that his dogs were very eager for his attention (almost needy), and seemed to be seeking his companionship as they ran up to and away from him, wagged their tails, nosed at his arm or hand and 'smiled' up at him. The interaction between the dogs and the young fellow was ongoing and frequently changing. He gave them playful attention and seemed to enjoy theirs as he laughed and joked about them throughout the visit.

The youngest child (age eight) of the case studies also appeared to have the desire and foundation for development of bonding with the family dog, a four year old Retriever. However, it is likely that mitigating factors (size and activity level of the dog, age and size of the child, parental control of interaction between the child and dog) placed constraints on the relationship, and as such it was not seen to have the depth and breadth that might otherwise develop and be reflected concomitantly under the other themes. Nevertheless, during the home visit, observations noted and suggestive of the desire and foundation for development of bonding were:

> Child-dog interactions were closely monitored by the parents. In fact, it seemed that whenever the child or dog started to interact with each other a parent would interrupt the process. This young fellow appeared conditioned not to give the dog eye contact (encouragement), as it was noted that he would look quickly at the dog from across the room, then look straight ahead or out the window. The dog paced back and forth, frequently changing what he was doing, wagging his tail, smiling, seeking attention or petting, and looking at the child, then looking out the window, back at the child, out the window. The child was observed to sneek a peek at the dog intermittently. Finally the researcher determined that although this might be reflective of behavior when someone comes to visit and the dog is expected to be more settled, there was a need to see what might occur if the parents were sent out of the room (to their rooms!). They were discreetly banished. At first there was no notable change, and when the dog approached the child the child would start to interact, then look furtively toward the upstairs where the parents had gone, and not respond to the dog. With encouragement from the researcher ("what a nice dog you have, he seems really friendly, it looks like he wants to be petted"), the boy smiled and began petting and playing with the dog. The large, playful dog seemed delighted and boisterously responded. They seemed to enjoy themselves as evidenced by a lot of tail-wagging by the dog, physical rough-housing, vocalization, and smiling on the part of both.

The Behavioral-Physiological Dimension

The children and their parent(s) were also interviewed in regard to the child's involvement in meeting the dog's nutritional and other physical needs, as well as shared physical activities. This included questions pertaining to the child's attentiveness to dog's nutritional needs, assuming responsibility to care for the dog, and thoughtfulness in caring for another. Within this, information was sought about behaviors commited to care for the dog. As well any indications that the dog might have a sense of trust that he or she would be cared for by the child on a consistent basis were also noted. The first two examples of this are taken from case studies of individuals who according to measures of each dimension, are considered highly bonded. It is noted that in the first instance with the older child, the behaviors to care for the dog are a matter of personal choice and appear to be spontaneous or a natural extension of his love for the dog. In the second instance the child is much younger and was also noted to have attentional difficulties, both of which likely impact the dynamics of his relationship with the family dog.

The Interviews

A 16 year old male with a four year old chow-cross exemplified through his comments that he is an individual who is attentive to his dog's nutritional needs. He indicated that he chooses to feed the dog and makes sure he has fresh water, and that he does this on a regular basis. Furthermore, this wass not part of his assigned chores in the home but rather was reported to be something he does voluntarily and without need for reminding. Evidence that he is likely attentive to the dog's physical needs is seen in the variety within his response to questions from the interview guide. Cleaning up the yard after the dog, a task which might be expected to be less regularly attended to by children, was reported by this young man to be something he takes care of on a regular basis. He also noted that he walks the dog at least three times a week and added that they also run together. The young man commented that his dog is always included in play, and gave an example of their play together when he practices basketball. Besides including the dog in his own play activities, he reported that the dog:

> "...has his own toys...a tugger, rope, carrot, onion, and rubber bat."

The researcher noted that some of these were children's toys, which also suggests that the dog might be viewed as a family member or sibling. This young fellow's parent elaborated further on the depth and breadth of caring demonstrated by his son:

> "The initiative he takes and the responsibility he assumes for the dog also seem to have had positive impact on his perception of his abilities...he does things automatically for the dog, without needing to be reminded. He has an overall concern about where the dog is, what he is doing, what he might need. Because of the dog, he now sees hiking as an adventure when we're out on family vacations."

It also appeared that the more evidence for depth of bonding, the more likely even younger children were to report voluntary participation in a variety of activities to care for the pet, including the less pleasurable yard clean up. This is noted in a young male age nine, with a four and one half year old Boxer-Cross who commented:

> "I help clean up the yard...that is not so much fun."

His statement was corroberated by the parent's comment that:

> "He even tends to be more self-disciplined in the mornings, likely because of some of the activities he does to care for her (water, letting the dog outside).

In a few other instances there was less depth reported and observed in the relationship. This tended to reveal itself both in the individual's view of the relationship and in behaviors to care for or activities with the dog. An example is the case of a child performing activities to care for his dog, but doing so when asked and viewing the activities as a chore, rather than assuming the responsibility in a cheerful, spontaneous manner. Also in this case it appears that the dog serves in more of a teaching or socializing role for the child, with perhaps less overall benefit at this point to the dog. In contrast to the nine year old male with the Boxer as noted above, consider the comments of another nine year old male with the seven year old Collie:

> "When asked, I clean up the yard after her. I feed her on my own sometimes. I also clean up her toys and clean up my room."

This was substantiated by his parent, whose additional observations suggested the perspective of benefit to the child as the primary focus (without mention of the dog's need for exercise):

> "He has become more physically fit, enjoys riding his bike or walking with the dogs."

The youngest child in the study was not expected by his parents to regularly perform activities in regard to the dog's care, and given the dog's size and activity level was also not expected to independently walk the dog. However, some benefits in terms of the socializing nature of the dog and his presence as a member of the family are seen in the behavior of the child (an eight year old male, with a four year old Retriever):

> "Sometimes I feed him...it's not really part of my chores, it's extra."

His parents commented that the child is learning discipline and responsibility

> "...because of the dog, when activities involve the dog he'll do things more quickly now, and without complaining."

The theme of behaviors reflecting attentiveness, responsibility, thoughtfulness, and commitment are seen as intertwined with emotional connectedness or attachment and highly evident from material obtained from and about the thirteen year old female in the study. The reported behaviors seem stimulated by empathy and commitment on the part of the young lady, and reciprocal love and caring between herself and her dog. Their relationship is an example of mutual connectedness and differs signficantly from the less interactive cases depicted above:

> "She won't eat alone...she'll leave food untouched, even for hours...she likes kibbles, I make them from scratch for her."

Her parents commented that:

> "She has always been good with the dog, and responsible in caring for her. Both are physically active. She takes the dog for walks, runs, and along roller blading. She is very 'tuned in' to the dog's welfare, and takes initiative in feeding, grooming, exercising her. This is consistent whether we (parents) are home or not."

As noted with this young lady, maturity of the child also appears to be play a role in undertaking activities to care for the family dog. Another young lady (age 16) who became more attached to the dog after her brother left home (delayed bonding) reportedly takes initiative and displays attentive, thoughtful behaviors in caring for her dog as well.

This was evident from her comments, but more clearly from her parent's observations that:

> "She looks after the dog well. When the dog became ill and needed medication, she helped keep the schedule by administering the medication as well. She'll choose dog-care responsibilities over other chores, and is attentive to what the dog needs as her first priority."

In many of the cases with younger children and larger dogs, activities to care for the dog or aspects such as independently walking the dog were not expectations of the parents. Some of the children saw such activities as opportunities to do something for the dog, and also were seen to obtain physical benefits from their participation, as noted in the following case of a male age nine, with an eight year old Irish Setter:

> "I sometimes fill his dish with food...I like to do it. I check his water supply and make sure he has fresh water."

The child's guardian commented that he enjoys teaching, training, and helping out with the dog, noting:

> "His eye hand coordination and timing have also improved greatly because of handling the dog."

Observed Behaviors

Behaviors to care for and interaction with the dog were observed during the home visit and noted on the Behavior Observation Cue List. These included attentiveness to dog's nutritional needs, assuming responsibility to care for the dog, and showing thoughtfulness in caring for another. Attentiveness to the dog's physical needs, behaviors commited to care for the dog, and the dog's display of behaviors suggesting a sense of trust that he or she will be cared for were also noted. It had been hypothesized the the dog's display of behaviors suggesting a sense of trust that he or she would be cared for by the child would be dependent upon overall consistency of care from the child over the time the dog had been in the home.

This was quite evident in the case of the sixteen year old male and his Chow-Cross dog:

> The dog sat and looked up at the shelf where his treats are stored, the young man knew what he wanted, and responded immediately.

This was not the situation in another case (12 year old male with a seven year old Collie):

> He ignored their pleas for water until encouraged by the researcher to get them some (they had been outside and seemed hot and thirsty).

The Social Dimension

A theme depicting the social nature of the relationship between children and their dogs was also noted from the interview data and behavior observations. This encompassed features similar to parent child socialization and aspects of the relationship wherein the object of attachment is an extension of the self, and such that criticism or praise of the dog is an extension of the self or reflects on the self. It also includes the teaching and training components which assume intellectual capacities, personality characteristics, temperament and childlike characteristics. This was noted to be very similar to a parent teaching and training an infant or young child. Implications were noted for both the child and dog in terms of emotional benefit as well (self-esteem, sense of mastery, confidence).

The Interviews

This theme was evident in a number of cases, with the benefit to the child varying and likely dependent upon their own needs and experiences. In one case the child (male age 12, with a seven year old Collie) was observed by the researcher to be one who was likely relating to the dog from his own experiences of knowing what he should and should not do in daily life, and testing the limits. He was also likely to be learning some things from observing his dog. His comments are noted to be quite insightful, and suggest that he might benefit from the socialization aspect of his relationship with the dog:

> "They're kinda smart...like humans...some 'shake a paw'...they know what they're supposed to do, and sometimes they know what they're not supposed to do, and do it anyway to test the limits."

A child might also benefit from the dog 'as an extension of the self' when the dog serves as a medium of contact and facilitates communication or socialization with others, and enhances his or her sense of worth, as seen in the case of the eight year old male with the four year old Retriever who commented:

> "People who have dogs like me more."

His guardian observed that:

> "If the dog is along when I take the boys to school or pick them up, I notice that he is more outgoing with people...he seems to enjoy showing off the dog, and the dog appears to enjoy it as well, he likes the attention and petting."

The teaching or training aspect was seen as particularly important for a young child who reportedly has behavioral problems himself. His pride in the dog as an extension of himself was also evident, and according to the guardian's comment is resulting in various benefits:

> "I do training with him, I teach him to sit, down, heel, I learned this from my auntie. The dog likes it, he's been doing it all his life, he's eight. He's good to train, I like talking to other kids about him. I feel proud when I show what he can do."

The guardian reported:

> "We've noticed an improvement in his confidence, especially with adults, which is related to his experiences with the dog, particularly in the area of training...he also knows he outshines the other kids in this one aspect. He was diagnosed as a 'slow learner' and has difficulties with his school work, so the success he enjoys with the dog is very important.

The significance of the social aspect and pride in the dog as an extension of the self was also seen in the comments of a beaming 16 year old male:

> "He's smart."

Again in the teaching and training description there was the element of assuming intellectual abilities of the dog:

> "He knows how to sit, shake a paw."

The parent observed that:

> "His self esteem has definitely improved as a direct influence of having the dog, he enjoys the comments from others about how beautiful his dog is."

The social dimension is well exemplified in another parent's comments about the family dog and her relationship with the children, especially one of the nine year old twins.

> "We've noticed that she has been good for the self-esteem of all the children, especially him. He has an Attention Deficit Hyperactivity Disorder, and has had difficulty with his school work. Because we've only had the dog for one year, it's hard to tell yet whether his relationship with the dog has had an impact on his school performance, however we certainly see a difference in terms of his taking responsibility and think this is related to feelings of empathy. The children had and currently have other pets including a hamster, walking stick worm, cats, rabbits and an iguana. This is the first long-term dog they would be aware of. The dog has had the most impact, especially for him.

Observed Behaviors

The social nature of the relationship between children and their dogs was noted from findings during the home visit. For example, in observations of the relationship between a 13 year old female and her four year old Labrador-Cross there was an element of delight in the dog's achievements. The young lady also appeared to be quite self-confident and pleased with her dog's response to her teachings, as noted:

> She appeared to delight in demonstrating the dog's achievements, which included counting to three (woofs), patience while waiting for a treat (balanced on the dog's nose), playing 'Find' - a game of hide and seek, as well as obedience commands such as sit, stay, down, stand.

Pride, and a derived sense of self-worth were noted in a younger child:

> This nine year old male proudly demonstrated some of the dog's talents, and the dog promptly responded to commands. It was clear from his pride in the

demonstration that he likely feels a sense of ownership or extension of himself and gleans value from it. The commands were firmly given in obedience training style.

Commitment

The children and their parents were also interviewed about the child's commitment to the dog and the nature of their relationship. Aspects examined in this regard were perceived mutual benefit, expressed feelings and behaviors suggestive that the child cares for dog and dog gives back; feelings of caring, empathy in regard to responsibility for the dog; and comments relating to self-worth - feeling needed by and useful to another. Where there was a high level of bonding these features were seen to reflect a mutual connectedness between child and dog; unconditional love and reciprocal love. A high level of commitment was also seen to mean a high degree of involvement with the dog at the centre of the child's interest. These features are clearly evident from the interview comments of two children who also scored at the upper end on the questionnaire.

The Interviews

In the case of the 16 year old male and his four year old chow-cross, empathy was noted in regard to sensistivity toward the dog:

> "I learned how a dog feels, like when he wants something."

Feelings of caring in regard to responsibility for the dog were noted in:

> "He depends on me for feeding and brushing."

Mutual 'connectedness' was implied through his comments that:

> "He makes me feel good, he protects me - if someone comes to the door he barks, I feel safe when I'm home alone because I know if someone tried to break in he would bark and defend me."

A high degree of involvement was noted as well from comments such as:

> "I talk with others about him a lot, am able to give advice to someone considering getting a dog, because I could talk about the breed and about him. I wanted a dog since I was about ten years old."

This young man's parent observed:

> "He talks more, and can get into the subject of the dog quickly and stay focused, which is something that has been difficult for him in the past."

In reference to their nine year old son and this Boxer, mutual 'connectedness' was noted from:

> "He loves her so much...on occasion we have actually discovered him in the kennel with her!"

Mutual benefit and a high degree of involvement were also reported:

> "His self-confidence has increased as a result of the things he does with her and for her, and his ability to talk about her, be accepted more by others."

Indication of involvement was also noted in the case of a child (male age 12, with a seven year old Collie) who otherwise did not appear to have as much depth of relationship with his dog. This might suggest potential for development in their relationship and certainly suggests that for him, the dog represents an interest and one which he enjoys sharing with others:

> "He uses them in his stories that he has to write or tell at school."

This was also reported about the youngest child of the case studies from the parent comment:

> "There have been some changes in his interest in and activities at school..when given written assignments or stories to tell, he writes about the dog or cat...he has become more interested in the dog, and this seems to be extending to interest in others, and his being more helpful toward other people."

Mutual benefit, connectedness, and a high degreee of involvement between a young lady and her dog were noted by both her report and those of her parents in their comments regarding her relationship with the family dog. The young lady observed:

> "She cheers me up, I could have had a bad day at school or something and she just changes things because she likes to be happy, she accomodates to whatever mood I'm in. You can always approach her and she'll respond. I've learned about myself from her...that I can change my mood, that I'm not stuck, I can change focus. Her ability to help change my mood has taught me that. She always gives me a good morning hug...and especially in winter she cuddles...these things get me going, get my day off to a good start."

Her parents' observations also depicted the close attachment and commitment between their daughter and her dog:

> "She takes her rollerblading, and the dog actually slows down to the sound of the brake on the roller blade...she has shown concern for our daughter, for example when there was a rough area on the sidewalk and our daughter fell, the dog never left her, but stood by her and seemed to be comforting her afterward."

Commitment was also reflected in the case of the young lady (age 16) who appeared to have a delayed bonding with her dog. It was evident that there is consistency in her attentiveness to the dog's needs, by example of the reported sense of trust that she will respond and care for her:

> "I'm definitely a 'dog person', they need you more than for example, cats. She'll tell me if she wants something, she actually goes to the fridge, sits there and looks longingly at it until I get her treats...if the family has a snack, she wants one too, especially since she has been getting older. I can go up to other dogs more easily now, approach other dogs, and am more apt to talk with others and visit with other dogs, or talk with people about their dogs."

Her mother's comment also suggests that there is now a high degree of involvement with the dog:

> "She'll choose dog-care responsibilities over other chores, and is attentive to what the dog needs as her first priority."

Observed Behaviors

From observations noted on the Behavior Observation Cue List there was additional evidence more descriptive of the various degrees of bonding. As well, there were consistencies with the factors identified from the questionnaire. The observations related to noted instances suggesting mutual benefit where the child was seen as caring for dog, and dog appeared to reciprocate; behaviors reflective of a sense that the child cared for the dog, had empathy in regard to responsibility for the dog, and that the child's sense of self-worth was somehow impacted by the dog, usually related to feeling needed by and useful to another. Observations were also made in regard to mutual 'connectedness' between person and dog and signs of love - unconditional and reciprocal in the relationship. As well, the researcher sought to observe whether or not there might be a high degree of involvement with the dog at the centre of the person's interest.

A very deep level of commitment was noted in the case of a young man (age 16) who also scored highly on the questionnaire, and revealed a sensitive, intimate relationship with his dog, as noted in the observations:

> Mutual connectedness between the young man and his dog was noted in that the dog was seen to stop and listen to him from time to time as he spoke during the interview. His eyes were on the young man, almost like a child enjoying a parent's conversation. At one point the dog walked over to an open closet area, sat and looked up at the shelf, then at the young man. A box of dog 'treats' was on the shelf. The young man knew what the dog wanted, and responded immediately. There was also a sense of respect for between the two, as exemplified when the dog barked in response to something outside and the young fellow listened first, then said "shh" and the dog promptly stopped barking.

Similar sensitivity to the feelings of the dog, and connectedness or commitment to the dog is also seen in a younger child's actions and reactions to his dog's situation:

> This nine year old male was sensitive and responsive to his dog's need for attention when she wanted in from outside, and he expressed concern when she wanted to come into the kitchen to be with him but had muddy paws and was to wait at the back landing for a bit.

A beautiful, very close and highly commited relationship was observed in another case:

> This 13 year old female and her dog were obviously comfortable with each other and good companions. Eye contact with the dog was sometimes sought by her, and sometimes by the dog. During the visit, the physical proximity between the two seemed to be natural, with each seeking the other out as appropriate and might be expected in a healthy relationship. One got the sense of being in the presence of two very good friends in a wonderful harmony that requires neither

constant wordiness nor frequent touch for reassurance of the other. It was also noted that when the young lady spoke affectionately to the dog, the dog actually vocalized back as if responding appreciatively or in kind!

Thus, examination of the patterns which developed from analysis of the matrix yielded a view of the human-animal bond as something which might best be depicted under four themes. As noted above, these themes were evident across both the interview material and behavioral observations. Additionally, it was discovered that there was consistency between these themes and the factors identified through analysis of questionnaire data.

The Questionnaire: Person Animal Wellness Survey (PAWS)

Sample Characteristics: All Participants

Table 2 illustrates characteristics of all participants who completed the questionnaire (PAWS). This encompassed both results from the childrens scores on the questionnaire in the case studies of phase one and those obtained from the additional participants of phase two. Because in phase two age and gender was not required and the questionnaires were displayed unattended at venues, some participants did not indicate these personal characteristics.

Approximately 37 %of the overall sample indicating gender were male, with 57 % noted as female. The remaining 6 % did not indicate gender. In examining the questionnaires it was observed that about 27 % of participants from phase two simply indicated 'adult' rather than a specific age. From the remaining data where age was reported, it is noted that the average age was twenty five. The overall mean score obtained was 146 (SD=13.2). When information supplied by participants was examined, it was noted that the average age of their dogs was approximately 4.5 years (SD=3.3). Again, these were mostly large dogs (61.2 %) but the combined data revealed a greater number of small dogs (10.1 %) than was found among the case studies. The number of dogs individuals had as companions ranged from one to five.

Table 2. Characteristics of Total Sample

	Total
Characteristics of Pet-Owners	
Sample (n)	112 (100.0%)
Sex	
- Male	38 (37.3%)
- Female	64 (57.1%)
- Missing	[n = 10]
Age (years)	
- Mean (SD)	25.0 (13.4)
- Median	22.0
- Missing	[n = 25]
Number of Dogs	
- Range	1 to 5
- Median	1
Score on PAWS	
- Mean (SD)	146.4 (13.2)
- Median	148
Characteristics of the Dogs	
Sample (n)	129 (100.0%)
Age (years)	
- Mean (SD)	4.5 (3.3)
- Median	4.0
Size	
- Large	79 (61.2%)
- Medium	13 (10.1%)
- Small	37 (28.7%)

Note. Percentages may not equal 100 % due to rounding

Results from the Questionnaire (PAWS)

The questionnaire (Likert-scale format) designed and used in this study is shown in Appendix A. The range of possible scores on the questionnaire was from 34 to 170. In the present study the mean score was 146 (standard deviation 13.20). Although age and gender was not completed on all of the questionnaires, all but ten indicated gender. Of the number with gender noted, the majority were female. The average age of participants was 25 (SD=13.38). Comparison of mean scores on PAWS was calculated for both age and gender. There was no significant relationship between age and bonding (r=.10, p=.35). However, females tended to have a slightly higher mean score overall (149) than males (143), reflecting a statistically significant difference (F=4.56, p=.04).

Reliability of the Questionnaire (PAWS)

There was generally a high level of intercorrelation between the scores for items and the total score, suggesting relationship between individuals' response to a particular item and their total test score. The exception was item eight (.08 correlation), which is "my dog often wants attention when I am too busy". On reflection, this item was considered ambiguous and subject to varying interpretations. As a result it was discarded prior to undertaking the factor analysis.

Statistical analysis to determine internal consistency of questionnaire items indicates a coefficient of internal consistency at .82 representing the reliability of half the test. Spearman-Brown prophecy formula yielded no change, with a resulting reliability coefficient of .82 for the entire questionnaire. These values are considered within normal limits and suggest consistency among questionnaire items. Cronbach's coefficient alpha for the 34 item scale was .88, and with item eight discarded was .89, which reflects good reliability. Item to whole correlations were also calculated and are depicted in Appendix F, p.128.

Factor Analysis

Factor analysis was conducted to identify the underlying structure of items on the PAWS scale. A principal components analysis with varimax (orthogonal) was conducted using SPSS version 6.1 (SPSS Inc.) Item number eight was excluded from this analysis because as noted earlier, when the Item to Whole correlations were calculated it was found to be worded such that it was indiscriminate. In accordance with recommendations by Stevens (1996), factor selection was determined based on Eigenvalues equal to or greater than 1.0 and an examination of the scree plot. Both an oblique rotation and an orthogonal rotation were conducted. Given that results of the two analyses were almost identical, orthogonal rotation was used because of conceptual simplicity and ease of description. These were then further statistically examined to evaluate how much of the variance in the distribution of scores was accounted for by all of the factors combined, and then according to each factor. The underlying intent was to partition total variance (sum of the variances for the original variables) by first finding the linear combination of the variables which accounts for the maximum amount of variance. This became the first component or factor.

Each successive component accounted for the maximum amount of variance that was left. It should be noted as well that after the factor analysis was complete, a second rater independently reviewed the data as an additional reliability check and comparison was made between the factors she selected and interpretations she offered with those of the researcher. When comparison was made, it was noted that there was high inter-rater reliability for the factors selected as well as for the interpretations applied to the factors. The results of the factor analysis are presented in Table 3.

Table 3. Factor Loading and Factor Structure for the Person Animal Wellness Survey

Factor	Items	Factor Loading
1	Q20. If my dog were lost, sick or hurt, I would feel very sad.	.85
	Q22. I like to just 'hang out' or relax with my dog.	.71
	Q21. My dog means a lot to me.	.69
	Q12. It feels good to talk to my dog.	.65
	Q23. Just being with my dog makes me feel good.	.59
	Q13. Sometimes, the things my dog does makes me laugh.	.50
	Q28. My dog is a good buddy or friend.	.49
	Q32. I spend quite a bit of time with my dog.	.43
	Q29. I like cuddling with my dog	.41
2	Q17r. I don't like having to take care of my dog.	.85
	Q16. I like taking care of my dog (daily routine).	.78
	Q31. My dog helps be to feel good about myself.	.44
3	Q05. I make sure my dog has fresh water all the time.	.77
	Q06. I am responsible for feeding my dog on a daily basis.	.75
4	Q26r. My dog doesn't notice how I feel.	.77
	Q24. My dog knows when I feel sad, worried or upset.	.71
	Q11. I think my dog understands me.	.71
	Q25. It makes me feel better to talk to my dog if I'm sad, angry, etc..	.49
5	Q10r. My dog is dumb.	.80
	Q09. My dog is very smart.	.68
	Q19. I feel responsible for my dog, and that's okay.	.60
6	Q34. My dog loves me unconditionally.	.72
	Q14. My dog often comes to me for attention.	.69
	Q27. I miss my dog when we cannot be together.	.58
7	Q03. I walk or exercise my dog several times a week.	.62
	Q04. Even if others are around; my dog lets me know when he/she wants out.	-.55
	Q02. I am the person who usually walks the dog.	.54
	Q30. I make a point of spending time with my dog.	.53
8	Q07r. My dog is a nuisance.	-.73
	Q15. My dog is very mischievous.	.70
	Q01. I like teaching my dog things.	.60
9	Q33. I always wanted a dog.	.77
	Q18. I sometimes do things for my dog when I should be doing something else.	.48

As depicted in table 3, results from the factor analysis suggest that items on the PAWS can be reduced to nine factors. These factors accounted for a total of 67.1 % of the variance. Factor one, which accounted for 27.4 % of the variance had nine items. This factor appears to represent a psychological or emotional dimension. Examination of items included in this factor suggests emotional connection associated with love, joy, comfort, relaxation, and sharing. Related to this are items reflective of feelings for and mediated by the dog, as well as the significance of the dog to the individual and the psychological sense of companionship.

Factor two has three items, and accounted for 7.4 % of the variance. This factor appears to symbolize mutual benefit, with items suggesting the person cares for dog and dog gives back. It denotes feelings of caring and empathy in regard to responsibility for the dog. Associated with this are items which suggest there is benefit to the individual's sense of self-worth connected with feeling needed by and useful to another.

Factor three accounted for 6.5 % of the variance and has two items. This factor is seen as depicting attentiveness to the dog's nutritional needs, assuming responsibility to care for the dog, and thoughtfulness in caring for another.

Factor four has four items and appears to represent emotional reciprocity. It accounted for 5.7 % of the variance. Included are items suggestive of feeling understood by the dog and understanding the dog, as well as attributing 'mindedness' and emotional sensitivity to the dog.

Three items combined to form factor five, which accounted for 4.8 % of the variance. It encompasses teaching or training the dog, and appears to represent the individual's view of the dog as extension of his or her 'self' such that criticism or praise of the dog would be taken as a reflection on the person's self.

Factor six accounted for 4.4 % of the variance and has three items. Items included in this factor suggest that it portrays a mutual sense of connection or attachment between the person and his or her dog, and especially reflects indicators of unconditional and reciprocal love in the relationship.

Four items are combined in factor seven, which accounted for 4.1 percent of the variance. Examination of the items suggests that this factor pertains to the individual's attentiveness to the dog's physical needs and behaviors or activities around caring for the dog. Also included are items implying the dog's sense of trust that he or she will be cared for in relation to consistency of care.

Factor eight accounted for 3.6 % of the variance and has three items. This factors is seen to encompass items related to teaching or training and assumes the dog displays intellectual abilities and personality characteristics.

Factor nine has two items and appears to represent a high degree of involvement between the child and the dog, with the dog as a major focus of the child's interest. It accounted for 3.2 % of the variance.

Further examination of the factors suggests that human-animal bonding is a multi-dimensional phenomenon and that the nine factors indicated lend themselves well to a grouping of four dimensions. The dimensions and their factor groupings are:

1. Emotional-psychological dimension represented by:
    - Factor one - emotional connection
    - Factor four - emotional reciprocity (the dog as a sensitive companion)
2. Behavioral (physiological) dimension represented by:
    - Factor three - attentiveness to the dog's nutritional needs
    - Factor seven - attentiveness to the dog's physical needs

3. Social (nature of the relationship between person and dog) dimension represented by:

   Factor five - dependency (of the dog), and the dog as an extension of the self with the person as responsible for the dog

   Factor eight - child like characteristics of the dog and assumes intellectual ability, personality

4. Commitment (long term nature of the bond is an event throughout) dimension represented by:

   Factor two - mutual benefit, the person cares for the dog and the dog reciprocates

   Factor six - mutual connection between the person and the dog, unconditional and reciprocal love

   Factor nine - reflects a high degree of involvement, with the dog as the focus of the person's attention.

Combined Results

When the dimensions which emerged from the factors of the questionnaire were considered alongside the themes of the interview and behavior observation material it was apparent that there was a high degree of consistency across the results. Patterns and themes revealed from the interviews and observations fit well within the dimensions developed from the factors, and added depth of information. This can be seen in the following summary which resulted from comparison of the themes from the matrix of qualitative material to the factors of the questionnaire:

> Emotional This psychological or emotional dimension was reflected in factors one & four on the Questionnaire. Factor one was seen as relating to the theme of emotional connection or attachment associated with love, joy, comfort, relaxation, sharing. This included feelings for and mediated by the dog, and the significance of the dog to the person. Factor one also addressed whether or not there was a sense of companionship. Factor four relates to the theme of emotional reciprocity,

feeling understood by the dog and understanding the dog. It included attributing 'mindedness' and emotional sensitivity to the dog.

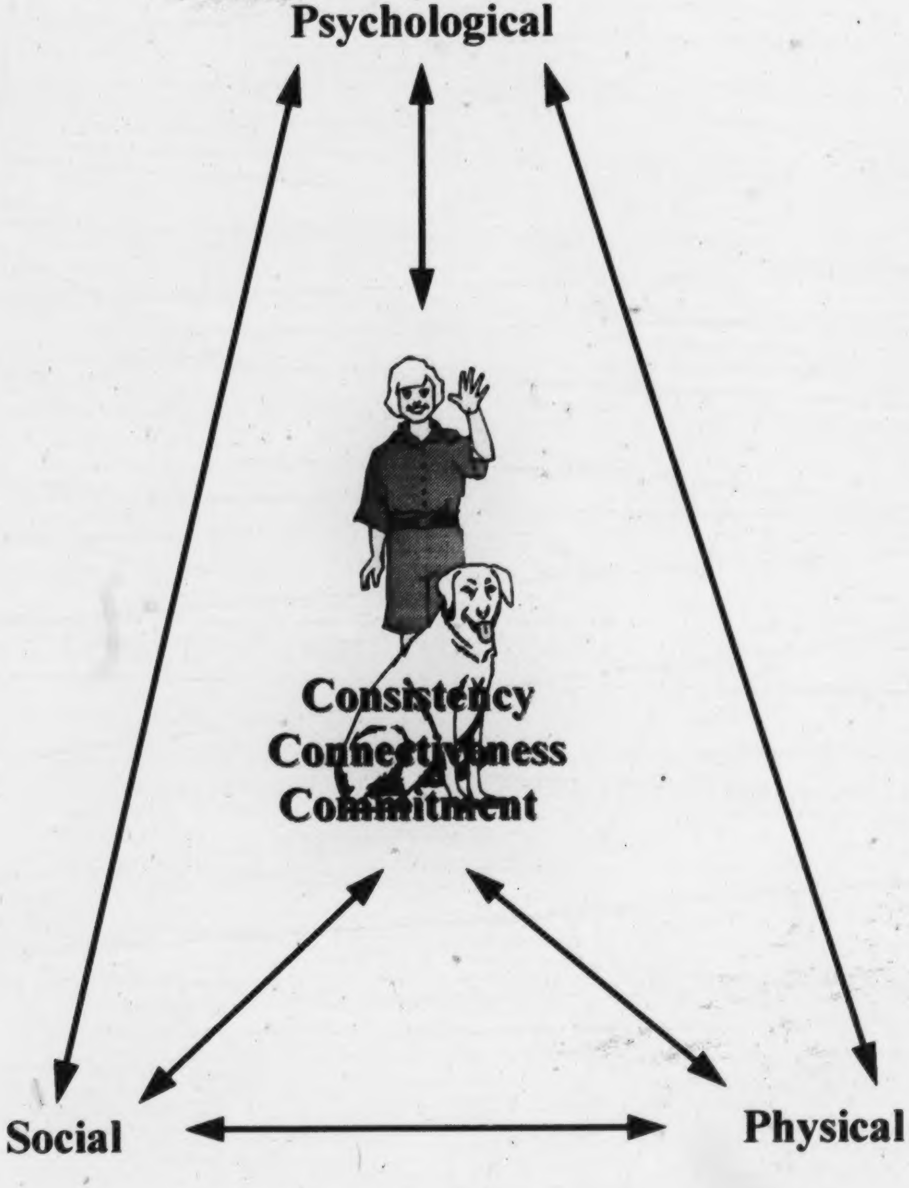
Behavior/Physical Care The physiological dimension was seen in factors three and seven on the Questionnaire. The theme depicting attentiveness to dog's nutritional needs, assuming responsibility to care for the dog, thoughtfulness in caring for another was seen as consistent with factor three. Related to this, factor seven was congruent with the themes around attentiveness to the dog's physical needs, behaviors commited to care, and the dog's sense of trust that he or she will be cared for (consistency of care).

Social The social dimension represents the nature of the relationship between person and dog as reflected in Factors five and eight of the Questionnaire. Factor five contains item connected with the theme wherein the dog might be viewed as an extension of the self, and criticism or praise of the dog is an extension of the self/reflects on the self. Additionally, factor eight relates to the theme around the teaching or training or socialization which assumes intellectual abilities, personality and childlike characteristics. Parallels are seen in this to a parent teaching and training a child and a person teaching and training the dog. Implications were noted for both person and dog in terms of emotional benefit (self-esteem, sense of mastery, confidence).

Commitment This dimension pertains to the long term nature of the bond as represented in Factors two, six, and nine of the Questionnaire. Included is the theme of mutual benefit, the person cares for dog and dog gives back, feelings of caring, empathy in regard to responsibility for the dog; self-worth - feeling needed by and useful to another, as also seen in factor two. As well, there is a mutual ‘connectiveness’ between person and dog, and love - unconditional and reciprocal, as noted in factor six. There is also a high degree of involvement; with the dog at the centre of the person's interest (consistent with factor nine).

The results from combination of the themes and factors led to development of a model of bonding as illustrated in Figure 1. In this model one sees the four dimensions as interactive, with the emotional-psychological as the foundation for human-animal bonding. The commitment dimension which features consistency and 'connectiveness', represents the deepest level of attachment. It is impacted and enhanced the most by the development of other dimensions, (especially that which is emotional) throughout the relationship.

Figure 1. Human-animal bonding as multidimensional



Chapter V

Discussion

Introduction

In relationships between people and their family dogs as in day to day life, much of what is visual, auditory, behavioral, and especially emotional , is not 'known' in the moment or to its fullest extent. Sometimes that which is experienced is taken for granted or simply accepted and enjoyed. The mystery of this invites investigation and prompts the inquiring mind to search for greater knowledge and deeper meaning about phenomenon which impact our lives tremendously, yet are not well understood. Such is the case with the relationships between people and their pet dogs.

The Attributes of Human-Animal Bonding

Thoughts, emotions, and behaviors are included in, but as categories cannot provide an adequate description of the attributes of human-animal bonding. The phenomenon was found to be more comprehensively described as multi-dimensional. The dimensions identified were emotional-psychological, behavioral, social, and commitment. As illustrated by the multidimensional model in the previous chapter, these dimensions were also observed from the case studies to be interconnected. Congruent with attachment theory from human studies (Bowlby, 1958), greater emotional bonding was reported and observed where there was evidence of the person nurturing and being commited to the dog. The emotional-psychological dimension, with its theme reflective of love is seen as the primary criterion necessary for bonding to occur. Cross-case analysis of the in-depth case study material revealed greater development in other dimensions when the emotional-psychological dimension was rich, and conversely, less development when it was not. In the latter instances, depth was notably lacking. From the factor analysis of the questionnaire the emotional-psychological dimension was also noted as important in that it accounted for most of the variance in the data. It is thus conceived to be the foundation upon which bonded relationships develop and grow, and key in the interplay among dimensions leading to and maintaining attachment.

Themes Representative of Bonding

The Emotional-Dimension

From the working matrix of the cross-case analysis, the emotional-psychological dimension obtained the highest frequency in reported attributes. Love appeared to be the foremost element within this dimension, and it was evident through reports and observations of gentle, consistent caring, expressed feelings for and toward the dog, valuing the dog, and in the sense of companionship. It was also seen as associated to varying degrees in the joy, comfort, relaxation, and sharing between the child and his or her family dog. It was indicated from reports and observations that the dog and child were sensitive, receptive, and responsive to each other. Along with this, it was seen in cases where the children reported and their parents commented that the relationship was mutually rewarding. It was noted that the latter was usually the case where the attachment appeared mutually deep across dimensions. This finding was congruent with Bowlby's (1958) emphasis on the development of mutual attachment.

In exploring the attributes of human animal bonding, the researcher became more aware of related issues such as how we form relationships with animals and why they have become so important in people's lives today. As revealed in the material from the case studies, the bond develops and is strengthened and deepened when the dog understands or responds appropriately to the human's communication and vice versa. The findings also indicate that a general reason why the bond develops is that people experience the relationship with the dog as something that makes them feel good. As noted in studies of attachment with humans (Ainsworth, 1973; Bowlby, 1969; Bretherton, 1985), this likely begins and is maintained with experiences of joy, need fulfillment, and responsiveness of the dog to the person. It is also likely that similar experiences occur with puppies as noted in the case for human infants.

Emotional and social support as well as shared activities and achievements were rated as highly important experiences contributing to the attachment between child and dog. This was most often reported in cases where children were closely bonded with the family dog. It should be noted that although shared activities (e.g., play, watching television together) and achievements (e.g., training) of the behavioral dimension might occur without a strong emotional-psychological dimension, there was more depth and breadth to the shared activities and achievements when the emotional-psychological dimension was stronger. Another theme associated with the emotional-psychological dimension was that the dogs were reported to be a source of unconditional love, acceptance, comfort, and often to provide a sense of security or protection. According to Ainsworth's description of attachment, the experience of comfort and security is unique to the bonded relationship and differentiates it from other relationships (Ainsworth, 1973). From the interview material of the present study the impression obtained was that generally the family dog was also likened to an ideal friend or sibling, always available and consistent in his or her behavior, ready to listen, and forgiving and supportive, rather than judgemental.

Just as the dog provided the children with a sense of security, a number of the children also expressed feeling protective of their dog. All of the children indicated they would feel upset if their dog were to become ill or to die. Some also expressed rather advanced insights about their relationship or the dog's behavior, and inferred ways he or she might think under various circumstances. This was consistent with earlier discussion around the topic of people attributing qualities we know to be consistent with our human species to dogs. The author contends that except in extreme cases, such association is sane and reflects a healthy way of one species relating to and comprehending the behaviors of another from within a familiar frame of reference.

The Behavioral Dimension

How might we know the person is bonded to their animal companion? Evidence of attachment was seen from features of the behavioral dimension. Both the children and adults who were more highly bonded with their dogs indicated taking their dog with them whenever they could. This was indeed well illustrated by the number of dogs the researcher had the opportunity to meet at the pet food and supplies store during phase two of the study. The children of the in-depth case studies also reported, were corroberated by parents, and observed by the researcher, to seek opportunities for comfortable physical proximity with their dogs and vice versa. This was particularly evident in those participants who rated as more highly bonded across all three measures. It was noted as well that leisure activities (camping, hiking) and family time were generally arranged or scheduled to include the dog (often at the request of the child). Behaviors to care for and please the dog were also reported in this dimension. These were frequently reported attributes of attachment among the children.

How do we know the dog is bonded to the person? Evidence from this study suggests that the dog's behaviors also bear witness to attachment. One indication both reported by participants and observed in the case studies, was that dogs who were observed to be more highly bonded usually spent more time, shared comfortable eye contact, and sought or were in amicable proximity with the child. They were attentive to the child, watching or sometimes following the child, in some instances inviting play, or making a request (treat, toy). It was noted that such behaviors were not demanding or 'needy' as might be the case in less bonded or even pathological relationships. Rather in most of the cases studied, the nature and degree of this behavior was observed to be more reflective of companionship, familiarity, and secure love. The dogs in well bonded relationships also appeared happy and responsive to the child, as evidenced by tail wagging, bright eyes, and smiles.

Although not tested in the study, a measure similar to that used in work with children separated from their parent could be used (Ainsworth, 1973). That is, one might observe the dog's behavior if he or she were separated from the child. It would be expected that as in normal human development a more secure, adult dog would be less distressed, but a puppy would likely vocalize his or her anxiety over loss of the attachment object. In the case of an adult dog, one might also investigate whether he or she had opportunity to socialize or form relationships from the time of infancy. Based on the premise that young puppies likely go through a developmental stage similar to that of human infants during which it is important that they are exposed to loving, caring, humans, parallels would likely be seen in attachment behaviors and styles. There is suggestion from recent research that without the experience of a healthy family milieu, particularly in terms of experiences with humans, dogs like children might later have difficulty forming attachments (Butler et al. 1996). These authors note as well that rescued dogs might be expected to form especially strong attachments, particularly if the situation around the rescue was traumatic. Alternatively, where there was a history of abuse, the rescued dog might display behaviors consistent with fear and anxiety seen in adjustment disorders. The current research did not explore any differences in situations between family dogs who had been rescued as compared to those obtained shortly after birth. However, this would also be an interesting avenue of research.

The Social Dimension

Features of this dimension encompassed the dog's socialization and the social nature of the relationship. The lower frequency rating of this dimension was likely affected by the inclusion of items pertaining to training the dog, given the age of some of the children, and the likelihood that most parents assume responsibility for the training or teaching in the home. However, the talents and abilities of the dog were generally taken by most children to reflect upon themselves. It was noted that many proudly put their dog through demonstrations for the researcher. In regard to this social aspect, parents comments were noted to provide evidence that the children appeared to benefit in terms of self-esteem and confidence when association was somehow made between the child's self and the dog's abilities or physical features. Where children were actively involved in the training, a sense of pride in mastery was also evident.

The Commitment Dimension

The factors contributing to the dimension identified as 'Commitment' were found to account for the least variance. When the affiliated theme from the qualitative mode of inquiry was examined it was found to represent a pattern of greater depth of bonding than any other dimension. Findings reflecting higher levels of commitment generally had consistently higher indications of bonding across other dimensions as well. Unlike the other dimensions, a prequisite for the commitment dimension to develop was that the other dimensions be well developed. For example, while behavioral activities (physical care or play) might take place or socialization (training) might be an interest of the person, these could be accomplished without depth of commitment, whereas commitment would be unlikely without depth from all three of the other dimensions. Commitment was also seen more in relationships which were longer term. It was noted in reported behaviors exemplifying unconditional and reciprocal love. Concurrently there was generally a high degree of involvement, with the dog at the centre of the person's interest. Examples of commitment included the many children who reported thinking about their pet when they had to be away at school or on vacation, and especially those who were more aware of their pets needs and made extra effort to look after them or include them on special occasions. There was a consistency and a 'connectiveness' in these relationships.

Levels of Attachment

As expected the present study revealed forms and variations of attachment with differing characteristics. However, there was not a great degree of difference within the population sampled. As suggested at the outset it is likely that the nature of the sample, being more likely to reflect highly bonded relationships than a random survey would perhaps find affected this result. For example, it has been the the researcher's observation that several levels or types of attachment likely exist. Buttler, Hetts, and Lagoni (1996) described this well. They note that firstly, some people appear to be bonded with their pet, like him or her, and provide good care, but treat him or her as 'just a dog'. Such individuals are responsible pet owners, but do not place significance on the relationship. Secondly, there seem to be people whose pets play a central role in their lives, with their lives scheduled around their dogs much as they would their children or other family members. Thirdly, the strongest relationships appear characterized by a philosophical dimension where people think of and treat their dogs much as they do people. Other types of relationship might be pathological, either in being cold, lacking in charity or generosity, abusive, or at the other extreme intense, emeshed and lacking in boundaries. However, material from the present research reflected primarily relationships of the second and third levels where the children and adults were responsible and commited to their dog, concerned for the dog's well-being and interested not only in teaching the dog to behave in a socially acceptable manner, but also expressed interest in understanding the dog and what he or she might be feeling and communicating.

In evaluating the material of the present study, theoretical comparison was also made to the attachment styles of Bartholomew and Horowitz (1991), as discussed in chapter two. It was noted that the children were generally seen as having the capacity for maintaining close relationships with their dogs and would fit within the 'Secure' attachment style. None of the children downplayed the importance of their relationship with the dog, and therefore would not fit with the 'Dismissing' style, nor were they avoidant of close relationship with their dogs ('Fearful' style). As well, none of the children fit the 'Preoccupied' description of being overinvolved with their dog.

The Questionnaire as an Assessment Instrument

Results from the statistical analyses conducted suggest the questionnaire has potential as an assessment instrument. There was good reliability. Item to whole calculations revealed uniformity, and the scores obtained on the questionnaire and ratings on the Behavior Observation Cue List were positively related. In general the information obtained from interviews and observations tended to be consistent with questionnaire data and served to add depth to the understanding of human-animal bonding.

The overall levels of bonding for the 112 participants who completed the questionnaire were high. Items on the questionnaire which were initially designed as pertaining to emotions and behavior were found to have the higher representation in relation to overall bonding than those items which were about the individual's thoughts. Further exploration of this aspect through the interview process led to insights which were revealing and of significance to our understanding of the human-animal bond. Children's thoughts about the dog though reported less frequently in response to the 'thoughts' items of the questionnaire, were revealed through the interviews both with the children and their parents. Examples include that the child thinks about the dog when at school or otherwise away from him or her. This was also seen in the topics of the children's stories or essays at school, reported conversations with peers and extended family, and their requests to buy gifts for their dog. The children's relationship with their dog also affected their thoughts in other important ways. An example is the child's reported ability or developing ability to 'think beyond himself'. It was noted that when related items were endorsed by the child on the questionnaire, it was also likely that the parent's comment independently corroberated with reports that the child was attentive and consistent in behaviors to care for the dog. When this was the case, the child in turn was noted to be reaping the emotional benefits from the dog reciprocating in various ways. Thus, from interpretation of the questionnaire in isolation from other measures one might simply deduce that some attributes were more prevalent. However, as revealed through the interviews and behavior observations, the phenomenon is more complex. While the emotional-psychological dimension was discovered to be primary, it was found to form patterns and themes in an interconnection with other dimensions. This feature was exemplified in the differences between the most bonded and least bonded cases as presented in chapter four.

Importance of the Method of Inquiry

This study sought to describe, understand, and explain the phenomenon of person and animal wellness or a healthy bonding relationship between people and dogs in general, with a specific focus upon those between children and their dog companions. It differs from research encountered in the literature reviewed, both in the population studied and in its method of inquiry. As noted earlier much of the literature is anecdotal, and where observations have been made the population studied has generally been those with special needs (persons who are elderly or who have a disability). More recently some surveys have been conducted as well as some studies with a quantitative approach toward development of scales or measures to assess bonding. However, while both the quantitative (survey or questionnaire) and qualitative (interview or observational) studies reviewed yielded information of merit, questions still remained and the attributes of human animal bonding did not appear to be adequately identified.

Considering that in psychological assessment we generally utilize a battery of tests and combine this with interviews and observations, the researcher undertook a similar method in exploration of the human-animal bonding phenomenon. As such, the current study was based on a blended methodology or triangulation approach. The medium for this investigation included a questionnaire, an Interview Guide, and a Behavior Observation Cue List. In accordance with attachment theory and the work of researchers (e.g., Melson, 1990), behaviors such as maintaining proximity to the attachment figure, smiling, approaching, touching, and being calmed by the attachment figure were all considered indices of attachment. The researcher sought through inclusion of these features to obtain information about the attributes of bonding. All measures were developed prior to the research with participants and pilot tested in advance of the larger scale study. Items on the questionnaire were developed from the researcher's personal experiences and observations with dogs and of people who have dogs as well as those who have little interest in dogs. These were later found to parallel items which other researchers had used in similar research (e.g., Companion Animal Bonding Scale, Pet Attachment Survey). This contributed confirmation that some of the items were likely constants and useful in this type of study. The importance of flexibility in the method of inquiry became evident when the interest in additional exploration of the questionnaire was identified. The primary focus remained the in-depth case study, and it was discovered in the analysis that the interviews and observations were crucial to a comprehensive assessment of the phenomenon. Nevertheless on completion of the case studies it also appeared the questionnaire itself might be useful as an instrument, and further investigation was undertaken to examine its potential for development as a measure of bonding. Although this was limited by time constraints and consequently an insufficient sample size for statistical determination of validity, it did yield additional information for simple factor analysis.

Practical Implications

Examination of the reported experiences and observed behaviors of the children included in the case studies suggests practical implications for children who are attached to their family dog. From the cross-case analysis of the working matrix on interview comments and behavioral observations, patterns were revealed suggesting improvement or enhancement to the child's level of self esteem as the most notable feature. This was most frequently associated with the emotional experience of joy or pleasure, happiness, and enjoyment of life with the dog.

The child's self-esteem was also enhanced through a sense of reciprocity in the relationship when the child was seen to either share activities with or care for the dog in some way, and the child felt cared for by the dog through a sense of emotional or physical comfort or both. This pattern was evident across many cases, and particularly in the narrative of the young lady whose dog was reported to sense and respond to her mood and through comforting help modify her feelings. From this one obtained the impression that the dog is also very much a member of the family, and with her sensitive and playful nature contributes much. Activities to socialize the dog such as training, teaching, and demonstrating what had been taught and learned also came through as valuable to the child in increasing his or her sense of achievement, and building confidence. Pride in their dog's appearance, unique characteristics, or talents was also notable through comments during the interviews of some children, and in the manner in which most of the children related to their dog. It is likely that this generalized to enhanced self-esteem as well.

Comfort was also seen to be a felt protection in a number of cases, including one of the cases presented wherein the child commented he felt more confident walking with the dog than he might alone. In another case not presented in the previous chapter, one individual indicated that as an only child her dog provides a sense of protection in the yard and at night, keeps her from feeling lonely, helps her to have things to do independently of her mother, and enables her to do more because they can do things together. Thus, relationship with her dog was noted to have improved this child's self-esteem, confidence and independence.

Joy, pleasure, happiness and greater enjoyment of life were seen to come through shared activities such as play, family hikes or walks, and sometimes observing the dog's mischievous or comical behavior. Again there was evidence of patterns across themes reflecting the interconnectedness of the dimensions. Usually when the emotional elements noted above were frequent in the reporting comment was also made that the child tended to share stories about his or her dog with others, either at school, with friends, or extended family. Many parents saw this as having led to improved communication skills and increased acceptance by others. Another pattern reported by parents was that in developing empathy for the dog, their child had developed or was developing empathy for others. This was noted in many cases to have generalized beyond the dog, to valuing the needs and desires of others and showing empathy.

Some children spoke of learning through their relationship with the dog about loyalty and trust and the psychological aspects involved. The reported experiences and feelings in the current study are consistent with the psychological advantages noted by other researchers including Levinson (1980) and McCullough (1986) notably, an increased self-confidence, a willingness to take risks, improved or enhanced interpersonal relationships, an increased sense of personal competence, and general optimism.

Taking responsibility also meant new learnings to care for or keep the dog's training consistent. Through this, many experienced a sense of mastery which also enhanced self esteem, encouraged learning in general, and for some, facilitated healthy risk taking behaviors. Additionally, thinking beyond oneself, attention to detail, concentration, and the ability to stay focused were reported as benefits associated with caring for the needs of a family dog. Looking at the behavioral dimension, the most significant feature was behaviors suggesting the the child's learned or developing ability to think beyond himself or herself about the needs or desires of the dog. This of course was intertwined significantly with a more well developed emotional dimension. In a number of cases the discipline or responsibility the child assumed in caring for the dog generalized to other areas of his or her life. The researcher observed that a good fit between activity level and temperament of the child and dog and their enjoyment of shared activities also appeared important to development of the relationship across dimensions. This was important for the connection between the caring and sharing of the behavioral dimension and the shared activities of the social dimension. In the social dimension, new learning and mastery in regard to the dog's characteristics and socialization and the social benefits from relationship with the dog were most prevalently reported.

In reflecting upon the cases selected for discussion, one should recall that these represented the most highly bonded and the least. The most highly bonded were the most involved with their dog in terms of themselves nurturing, assuming responsibility, and learning, mastering, and sharing activities with the dog. This was associated with a pattern of increased benefit to the child in terms of self-esteem, joy, pleasure, happiness and overall enjoyment of life with the dog. As well, it was noted that these children had learned to think beyond themselves to the needs, comfort and desires of another. The interaction between child and dog during the home visit and their observed fit in terms of size, temperament and activity level was compared to the reported sharing of activities and overall level of bonding. As also noted by McCullough (1986) in his study involving children with physical disabilities, there appeared to be higher levels of bonding where there was a good match in regard to size, temperament and activity level of the child and dog. When such was not the case, there was likely less bonding or a delayed bonding. This was exemplified in the lesser evidence for bonding seen for the relatively quiet, slightly built youngest child in a family and the very active, larger breed dog (retriever).

Theoretical Implications

A combination of learning and ethological theories was seen as accounting for the human-animal bonding noted from the reports and observations of this study. The author contends that both humans and animals are predisposed to forming attachments. Certain signals or behaviors, the nature of responses to these, their repitition, and importantly need satisfaction, are all intertwined in the attachment process. In the development of healthy attachment, the signaling systems change as each experiences the rewards of the relationship with the other, and in the case of younger dogs and children, as they achieve their various developmental milestones. In agreement with Bowlby (1969), it is likely that early bonding related experiences are over time represented cognitively as an internal working model of self and other, and these function as prototypes for later social relations. Attachment is viewed in accordance with Ainsworth's (1989), definition as a close enduring affectional bond between the person and dog. As well, the relationship between positive, enduring emotional bonds of the children and their dog companions was well exemplified as promoting healthy development of both child and dog.

The author also considered that in the beginning the focus of the person's future attachment is new to them, much like a new baby in the family, a new friend, a new car or other object. It fascinates one, it is a novelty. It provides pleasure. One gives it special care and attention. It continues to provide new experiences and pleasures. However, sometimes the new being or object does not appeal to, conflicts with, or does not serve the purposes of the person right from the outset, and the fascination and novelty are short-lived and pleasure is minimal. Other times, the novelty fades. In the latter situations the depth of attachment does not develop as it might. Ideally in living relationships, with the appropriate match from the outset combined with attention, care, and perceived enjoyment, deep attachment develops toward a cohesive relationship. In healthy relationships between living beings, the main feature appears to be reciprocal enjoyment, shared activities, and especially that which is caring, nurturing and self-less.

As noted in chapter one, and consistent with the theory of Bowlby (1988) and Bretherton (1985), it is likely that children and perhaps dogs as well form an internal working model of every attachment relationship. The model includes ideas or representations, and feelings about the relationship which are mentally stored. These mental representations are then cognitively available to child and dog even when the attachment object is absent. They are available not only for recall, but also for generalization to other instances of relationships. The nature of the internal working model of children in relation to their family dog remains unknown. However, from the ideas expressed by the children and the behaviors of the children and dogs in the present study, the author purports that children do develop an internal working model which includes representations associated with loving and nurturing the family dog and the reciprocal love and care from the dog. This could provide rehearsal and healthy reference for their later role as a parent or caring adult.

The researcher also contemplated why people form relationships with dogs, why some are closer than others, and why some people do not form such relationships at all. There appears to be a natural predisposition for relationships in both humans and dogs. Beyond this, it is likely a matter of life experiences. According to attachment theory, whether or not each has the capacity for forming relationships with the other depends on the nature of their early attachment experiences. If the human infant has positive attachment experiences with his or her parents, he or she develops an internal working model as noted above which includes the capacity to generalize to others. Similarly it is speculated that if the puppy has positive human imprinting experiences, then the internal working model which develops would be more likely to include capacity for depth in a relationship and generalization to others. When for either human or dog this does not occur, it is likely that the ability to form close attachments or bond with others is significantly diminished. Some attachments might be closer than others, and again these likely go back to the early attachment or imprinting experiences of child and dog. It is also possible that in relationships one might have more capacity than the other, with the resulting relationship being suboptimal or not achieving the degree of closeness that the one with capacity might otherwise have with a different person or dog. How much a relationship between person and dog with differing capacities develops toward its potential is likely dependent upon the efforts expended by both and the quality of their experiences together. One might help the other learn to trust and love, as is likely the case in some situations where a loving dog is introduced into the life of a child from a dysfunctional family background. Over time, with the unconditional love of the dog and with positive experiences the child might learn to trust and to love. Alternatively, an abused dog adopted into a loving caring family might also learn to trust and love.

The literature reviewed and the findings from the present study suggest we might also form relationships with dogs because humans and dogs are similar. Similarities are noted in that we both have a need for relatedness to a significant other, whether that be in the form of a parent, child, sibling or peer. It is a need to feel close, at one with another being. We both feel and express happiness if we are loved, as was exemplified by many of the children and dogs in the study. We need to understand and sense that we are understood. In a healthy relationship there is depth and breadth. The depth and breadth come from a foundation of love and other features of the emotional dimension topped with shared and mutually rewarding experiences occuring across dimensions and resulting in commitment. There is kindness and caring and consistency, which lead to trust. People who know their dogs well have seen them laugh, feel sad, anticipate, express eagerness and joy. Those who provide services to care for dogs (pet sitting, veterinary care, , SPCAs) have also seen this as well as fear, loneliness, a sense of abandonment, and even feelings of dispair.

Certain characteristics of dogs also appear to facilitate the bonding. According to Butler, Hetts, and Lagoni (1996) dogs are generally neotenic, meaning there is a peristence of infantile or juvenile characteristics into adulthood. Many breeds have features which are neotenic, with large round eyes in proportion to the size of their face, muzzles which are shortened or squished in and rounded foreheads. These neotenic features are thought to evoke care-giving responses and contribute to our attachment to the dogs, because we feel they are dependent upon us for their care. As noted earlier and evidenced in the present study, specific characteristics of the dog can be important and serve as the initial basis for the attraction to the dog. Examples include physical beauty, size, temperament, activity level, bravery, courage, and intelligence or responsiveness. As we have seen, pets often serve as extensions of the person's identity. Illustrations of this include attractiveness of the dog, its beauty, friendliness, and affectionate nature, all of which might be valued by the person as an extension of his or her self. Results from the present study suggest that humans do in fact often benefit from relationship with their dog in this manner. It is often discussed among dog lovers that frequently there is physical and personality resemblance between people and their pets. Sometimes though, we select animals for characteristics that we do not have, like bravery, beauty, playfulness. Generally the latter might also be fine, but as noted in the case of the young child with the large dog, if the activity level or some other feature is too discrepant the ability to interact and form attachment might be lessened. In the case of a child this might be temporary or a delayed bonding. It is likely that an adult with a poorly matched dog might have greater difficulty (e.g., high energy dog with a person who is not physically active).

Conclusions

Dogs as companions can contribute significantly to the psychological and physical well being of both children and adults. The attributes of human-animal bonding were found to be multidimensional, and to include interaction along a number of dimensions.

The emotional-psychological dimension was seen as the foundation upon which the other areas develop and grow, and the one with the most impact upon attachment. Commitment revealed as the dimension which represents the deeper levels of bonding. It requires 'connectiveness' to the attachment object as represented by consistency in the interaction from each of the other dimensions, especially the emotional-psychological. The ultimate climate for a healthy relationship appears to be a good match between the dog's size, activity level, and temperament, and that of the person. Where relationships deepen and bonding occurs, attention, nurturing, and shared activities are usually there from the outset and beyond. There is an element of consistency such that each learns they can count on the other to meet their needs, provide comfort, and pleasure. The advantages of bonding and its evidence are seen in development and enhancement of self esteem and related aspects of the individual's psychology. Healthy bonding is reciprocal and has mutual benefit for the players. The more the child has opportunity to interact with the dog, the greater the benefit. Congruent with expectation following review of the literature, the attributes of bonding noted in the present study were inextricably linked to appreciation of the benefits obtained from the interactions in the relationship. These results suggest a need within the field of educational psychology to increase our understanding of human-animal bonding, particularly as affects children, through continued research in this area and to apply this knowledge within school and therapeutic environments. It should be recalled as well that according to contemporary attachment theory (Bretherton, 1985), there is significant association between positive and enduring bonds and healthy human development.

Limitations

Participants surveyed for completion of the questionnaire and the in-depth case studies were not randomly selected but rather were chosen because they were likely to be highly involved with their pets. Although those completing the questionnaire at pet food and supplies specialty store, veterinarian clinic, and dog obedience training school were random in the sense of being anyone who had a family dog and generally unknown to the researcher, by virtue of being in these settings higher involvement was expected (especially for the pet food store and dog obedience training school). Also, the children who participated in the in-depth case study portion were obtained through referrals which began with those known to the researcher. Consequently, those referrals obtained from families known to the researcher were also more likely to be ones with children who were more highly involved with their dog. No attempt was made to include those with superficial pet relationships or those who might otherwise be less involved with their dog. Thus, the present findings do not reflect the entire spectrum of relationships with a family dog. Additionally, an obvious limitation of the study in regard to validation of the questionnaire was the sample size. As development of a scale was not the primary focus of the research, priority remained with the in-depth case study.

Suggestions for Future Research

Future research might expand the sample size and seek validation of the questionnaire. Another avenue might be to compare results from two or more samples selected across demographic variables including socio-economic, education level and family size. Other aspects of interest could be to compare ‘psychologically healthy’ individuals with those identified as experiencing pathology or dysfunction who have a family dog. Related areas of research interest for educational psychologists would be to include examination of children's academic progress at the outset and about one year following introduction of a dog into the family. This type of information could likely be obtained by having survey questionnaires available for completion by adoptees at an SPCA. Additionally, more classroom and therapy programs with dogs as co-therapist could be developed and scientifically evaluated for benefit to children with varying needs. Given the reported enhancement to the self esteem of many of the children in the current study, and the importance of self esteem to an individual's ability to function well academically, this would appear to be an area where educational psychologists could provide significant contribution. Robert Poresky's (1997) comments also suggest a need for further research into the impact of human-animal bonding in regard to improvements to cognitive development and enhanced capacity for empathy in children. Finally, results from this study and others suggest that children become very attached to their canine companions and considering that these companions have a significantly shorter life span, research and therapeutic models around the issues of bereavement and counselling with children must be undertaken. Although the author's experience in bereavement support has largely been with adults, similar issues exist for children. It has been my experience that although bereavement involving an animal companion is in many ways the same as for a human, it differs in the paucity of understanding within the counselling profession and the general lack of support people report obtaining from significant others in their lives. Researchers therefore are encouraged to develop educational materials and ways of counselling to assist children through the bereavement process when a beloved animal companion dies.

A Personal Note

I chose to study the relationship between people and pet dogs in general because I have experienced, seen and read about many such relationships which were wonderful, inspiring, truly beneficial, and sometimes life-saving. As I reflect upon personal relevance I am swept back to earliest happy memories which take me back to dog companions. Dogs were always a part of my family's life, a warm and close family blessed with love, caring for each other and others, respecting God and all he created.

Some people think those who express love and bonding in relation to a dog must be an otherwise lonely person, with minimal outside interests, few if any friends, and not much else going on for them in terms of activities or achievements. An example of such thinking comes to mind from an encounter with a psychologist at a clinic where I was serving as a facilitator for a Pet Bereavement Support Group. The fellow inquired about why all the people were arriving and what I was doing. I explained, and he commented sympathetically "they must be very lonely people, with few outside resources...not much to fall back on otherwise in their lives."

My own experience and that of people I know is quite different from this perception. Results from the current in-depth case studies with children also suggest quite a different picture from what might be the view of some who have not experienced human-animal bonding. People bond with pets to varying degrees, likely more as a function of their individual characteristics than those of the dog. The dogs I have observed mostly just seem to want to love and be loved. Some are easier to be attracted to or love than others, just as we are. It appears from the cases observed that children generally relate to the dog in a manner similar to the way they would relate to a sibling or friend, with younger ones in particular enjoying them as a playmate, and most appreciating the dog as one who listens attentively with acceptance, expresses feelings innocently and sincerely, inspires with their confidence and risk-taking, and promotes confidence through their response to things taught.

Bibliography

Ainsworth, M. D. S. (1973). The development of infant-mother attachment. In B. Caldwell & H. Ricciuti (Eds.), Review of child development research, (3). Chicago:University of Chicago Press.

Ainsworth, M. D. S. (1989). Attachments beyond infancy. American Psychologist, 44, 709-716.

Ainsworth, M. D. S., & Bell, S. M. (1969). Some contemporary patterns of mother-infant interaction in the feeding situation. In J. A. Ambrose (Ed), Stimulation in early infancy, London: Academic.

Ainsworth, M. D. S., Blehar, M. C., Waters, E. & Wall, S. (1978). Patterns of attachment: A psychological study of the strange situation. Hillsdale, N.J.: Lawrence Erlbaum.

Ainsworth, M. D. S. & Bowlby, J. (1991). An ethological approach to personality development. American Psychologist, 46, 333-341.

Arehart-Treichel, J. (1982, March 27). Pets: The health benefits. Science News, 220-223.

Armsden, G. C., & Greenberg, M. T., (1987). The inventory of parent and peer attachment: Individual differences and their relationship to psychological well-being in adolescence. Journal of Youth and Adolescence, 16, 427-454.

Barker, S. B., & Barker, R. T. (1990). Investigation of the construct validity of the Family Life Space Diagram. Journal of Mental health Counseling, 12, 506-514.

Bartholomew, K. (1994). Assessment of individual differences in adult attachment. Psychological Inquiry, 5, 23-27.

Bartholomew, K., & Horowitz, L. M. (1991). Attachment styles among young adults: A test of a four category model. Journal of Personality and Social Psychology, 61 226-244.

Berman, M. (1989). Coming to our senses: Body and spirit in the hidden history of the West. New York. Simon and Schuster.

Bloom, B.S. (1976). Human characteristics and school learning. New York: McGraw-Hill Book Co.

Blue, G. F. (1986, December). The value of pets in children's lives. Childhood Education, 24, 85-90.

Bowlby, J. (1958). The nature of the child's tie to his mother. International Journal of Psychoanalysis 39(35).

Bowlby, J. (1969). Attachment and loss. Attachment (1). New York: Basic Books.

Bowlby, J. (1973). Separation and loss. New York: Basic Books.

Bowlby, J. (1988). A secure base: Parent-child attachments and healthy human development. New York: Basic Books.

Bretherton, I. (1985). Attachment theory: Retrospect and prospect. Monographs of the Society for Research in Child Development. 50, 3-38.

Bretherton, I. (1992). The origins of attachment theory: John Bowlby and Mary Ainsworth. Developmental Psychology, 28, 759-775.

Bryant, B. K. (1990, Spring). The richness of the child-pet relationship: A consideration of both benefits and costs of pets to children. Anthrozoos, 3(4), 253-261.

Butler, C., Hetts, S., & Lagoni, L. (1996). Friends for life: Loving and losing your animal companion. Boulder, Co.: Sounds True Audio.

Corson, S. A., Corson, E. O., Gwynne, P. H., & Arnold, L. E. (1977). Pet dogs as non-verbal conversation links in hospital psychiatry. Comprehensive Psychiatry, 18, 61-72.

Cusack, O., Smith, E. (1984). Pets and the elderly: The therapeutic bond. New York: Haworth.

Cusak, O. (1988). Pets and mental health. New York & London England: Haworth.

Cusak, O. (1989, November). The human-animal bond. Gazette. 52-59.

Cunningham, G. K. (1986). Educational and psychological measurement. New York: Collier Macmillan Publishers.

Draper, R. J., Gerber, G. J., & Layng, Marnie. (1990, September). Defining the role of pet animals in psychotherapy. Psychiatric Journal of the University of Ottawa, 15(3), 169-172.

Dyson, A. H. (1992). Whistle for Willie, lost puppies, and cartoon dogs: The socio-cultural dimensions of young children's composing. Journal of Reading Behavior, 24(4), 433-462.

Ferguson, G. A. (1976). Statistical analysis in psychology & education, Fourth edition. New York: McGraw-Hill Book Company.

Fogel, A., & Melson, G. F. (1988). Child development: Individual, Family and Society. St. Paul, Minn. West.

Gall, M. D., Borg, W. R., & Gall, J. P. (1996). Educational research: An introduction., Sixth Edition. New York: Longman.

Gerwitz, J. L. (1969). Mechanisms of social learning: Some roles of stimulation and behavior in early human development. In D. A. Goslin (Ed). Handbook of socialization theory and research. Chicago: Rand-McNally.

Goldmeier, J. (1986). Pets or people: Another research note. Gerontology, 26(2), 203-206.

Griffin D., & Bartholomew, K. (1994). Models of the self and other: Fundamental dimensions underlying measures of adult attachment. Journal of Personality and Social Psychology, 67, 430-445.

Harlow, H. F., & Zimmerman, R. R. (1959). Affectional responses in the infant monkey. Science, 130, 421-432.

Hazan, C., & Shaver, P. (1987). Romantic love conceptualized as an attachment process. Journal of Personality and Social Psychology, 59, 270-280.

Hensel, N. H. (1991). Social leadership skills in young children. Roeper Review, 14(1), 4-6.

Holcomb, R., Williams, R. C. & Richards, P. S. (1985). The elements of attachment: Relationship maintenance and intimacy. Journal of the Delta Society,2, 28-34.

Humeston, B. (1983, August). How pets help people cope. Better Homes and Gardens, 61-66.

Janzen, H. (1995). That's life. The Edmonton Journal.

Johnson, T.,Garrity, T. F., & Stallones, L. (1992). Psychometric evaluation of the Lexington Attachment to Pets Scale (LAPS). Anthrozoos, 5(3), 160-175.

Kafer, R., Lago, D.,Wamboldt, P.,& Harington, F. (1992). The Pet Relationship Scale: Replication of psychometric properties in random samples and association with attitudes toward wild animals. Anthrozoos, V(2), 93-105.

Kansas State University, (1997). Household pets may help children's IQ. In View [On Line]. http://www.newss.ksu.edu/WEB/News/8797childiq.html.

Katcher, A. (1985). Physiologic and behavioral responses to companion animals of North America. Small Animal Practice, 15, 403-410.

Kehoe, M. (1990). Loneliness and the aging homosexual: Is pet therapy an answer? Journal of Homosexuality, 20(3-4), 137-142.

Kenny, M. E., & Rice, K. G. (1995). Attachment to parents and adjustments in late adolescent college students: Current status, applications and future considerations. The Counseling Psychologist, 23, 433-456.

Kidd, R. M., & Kidd, A. H. (1990). High school students and their pets. Psychological Reports, 66(3, pt 2), 1391-1394.

Kidd, A.H., & Kidd, R. M. (1987). Reaction of infants and toddlers to live and toy animals. Psychological Reports, 61, 455-464.

Kerlinger, F. N. (1979). Behavioral research: A conceptual approach. New York: Holt, Rinehart and Winston.

Klaus, M. H., & Kennel, J. H. (1976). Maternal-infant bonding. St. Louis: Mosby, 1976.

Lago, D., Kafer, M., Delaney, C., & Connell, C. (1988). Assessment of favorable attitudes toward pets: Development and preliminary validation of self-report pet relationship scales. Anthrozoos, 1(4), 240-254.

Lapsley, D. K., & Rice, K. G., & Fitzgerald, D. P. (1990). Adolescent attachment, identity, and adjustment to college: Implications for the continuity of adaptation hypothesis. Journal of Counseling & Development, 68, 561-565.

Levinson, B. M. (1972). Pets and human development. Springfield, Il: Thomas.

Levinson, B. M. (1980). The child and his pet: A world of non-verbal communication. In S. A. Corson & E. O. Corson (Eds.), Ethnology and non-verbal communication in mental health, (63-81), Oxford: Pergamon Press.

Mallon, G. P. (1994, April). Some of our best therapists are dogs. Child and Youth Care Forum, 23(2), 89-101.

McCall, R. B. (1980). Fundamental statistics for psychology, Third edition. New York: Harcourt, Brace Jovanovich, Inc.

McCullough, W. T. (1986). The effects of pet ownership on the psychological well-being of physically disabled children. (unpublished dissertation). University International Dissertation Information Services.

Melson, G. F. (1990). Studying children's attachment to their pets: A conceptual and methodological review. Anthrozoos, IV(2), 91-99.

Melson, G. F., Peet, S., & Sparks, C. (1991). Children's attachment to their pets: Links to socio-emotional development. Children's Environment Quarterly, 8(2), 55-65.

Miller, M., & Lago, D. (1991). Observed pet owner in-home interactions: Species differences and association with the pet relationship scale. Anthrozoos, 4(4), 49-54.

Millot, J., & Filiatre, J. (1986). The behavioral sequences in the communication system between the child and his pet dog. Applied Animal Behavior Science, 16(4), 383-390.

Nebbe, L. L. (1991). The human-animal bond and the elementary school counselor. School Counsellor, 38(5), 362-371.

Netting, F. E., Wilson C. C., & New, J. C. (1987). The human-animal bond: Implications for practice. Social Work, 32(1), 60-64.

Osterlind, S. J. (1989). Constructing test items. Boston: Kluwer Academic Publishers.

Paterson, J., Blashko, C., & Janzen, H. L. (1991). When you stand alone. Edmonton, Alberta.: Three Pears Publishing.

Poresky, R. H., Hendrix, C., & Mosier, J. E. (1987. The Companion Animal Bonding Scale: Internal reliability and construct validity. Psychological Reports, 60, 743-746.

Poresky, R. H., Hendrix, C., & Mosier, J. E. (1988). The Companion Animal Semantic Differential: Long and short form reliability and validity. Educational and Psychological Measurement, 48, 255-260.

Poresky, R. H., Hendrix, C., Mosier, J., & Samuelson, M. L. (1988). Children's pets and adults self-concepts. Journal of Psychology, 122(5), 463-469.

Poresky, R. H. (1989). Analyzing human-animal relationship measures. Anthrozoos, 2, 236-244.

Poresky, R. H., & Hendrix, C. (1990, Aug). Differential aspects of pet presence and pet bonding on young children. Psychological Reports, 67(1), 51-54.

Raina, P., Walter-Toews, D., & Bonnett, B. (1996). Presented Paper at 'Animals, Health & Quality of Life'. World Health Organization. Geneva. n.d.

Redefer, L. A., & Goodman, J. F. (1989). Brief report: Pet-facilitated therapy with autistic children. Journal of Autism and Developmental Disorders, 19(3), 461-467.

Robin, M., R ten Bensel, J. S. & Quigley, J. S., & Anderson, R. K. (1983). Childhood pets and psychosocial development of adolescents. In: Katcher A. H., & Beck, A. M. (Eds). New Perspectives on our lives with companion animals. 436-443. Philadelphia: University of Pennsylvania Press.

Robins, D. M., Sanders, C. R., & Cahill, S. E. (1991, April). Dogs and their people: Pet facilitated interaction in a public setting. Journal of Contemporary Ethnography, 20(1), 3-25.

Roid, G. H., & Fitts, W. H. (1988). Tennessee Self-Concept Scale Revised Manual. Los Angeles: Western Psychological Services.

Rourke, B. P., & Fisk, J. L. (1981). Socio-emotional disturbances of learning disabled children: The role of central processing deficits. Bulletin of the Orton Society, 31, 77-88.

Sanders, C. R. (1993). Understanding dogs: Caretakers' attributions of mindedness in canine-human relationships. Journal of Contemporary Ethnography, 22, 205-226.

Sanders, C. R. (1990). Excusing tactics: Social responses to the public misbehavior of companion animals. Anthrozoos, IV(2), 82-88.

Sax, B. (1988) Anthropomorphism in animal encyclopedias of nineteenth century America. New York Folklore, 14, 107-122.

Schantz, P. M. (1990). Preventing potential health hazards incidental to the use of pets in therapy. Anthrozoos, 41(1), 14-23.

Sears, R. R., Maccoby, E. E., & Levin, H. (1957). Patterns of child rearing. New York: Harper & Row.

Shaefer, C., (1973). Shipwreck Test. http://ericae.net/tc2/tc007347.html.

Stake, R. (1995). The art of case research. Thousand Oaks, CA: Sage Publications.

Stallones, L., Marx, M. B., Garrity, T. F., & Johnson, T. P. (1990). Pet ownership and attachment in relation to the health of U. S. adults, 21 to 64 years of age. Anthrozoos, IV(2), 100-111.

Stevens, J. (1996). Applied multivariate statistics for the social sciences (3rd. ed.). Mahwah, NJ: Lawrence Erlbaum Associates.

Tapper, R. (1988). Animality, humanity, morality, society. In T. Ingold (Ed), What is an Animal? (41-62). London. Unwin Hyman.

Thomas, E.M. (1993). The hidden life of dogs. Boston: Houghton Mifflin.

Thorndike, R. M., Cunningham, G. K., Thorndike, R. L., & Hagen, E. P. (1991). Measurement and evaluation in psychology and education. Fifth Edition. New York: Macmillan Publishing Company.

Voith, V. L. (1985). Attachment of people to companion animals. Veterinary clinics of North America: Small animal practice, 15, 289-295.

Wilson, C. C. (1991). The pet as an anxiolytic intervention. The Journal of Nervous and Mental Disease, 179(8), 482-489.

Working Group, Public Health Service. (1988). Health benefits of pets. NIH Technology Assessment Workshop. U.S. Department of Health & Human Services, National Institutes of Health.

Yin, R. (1994). Case study research: Design and methods (2nd. ed.). Beverly Hills, CA: Sage Publishing.

Appendix A

Questionnaire: Person-Animal Wellness Survey (PAWS)

Name:______________________________; Age_________

Pet's Name:________________; Breed________________; Age: ________

The following is a list of statements that tell how some people think and feel about their dog, and things that might be done for the dog, as well as activities shared with their dog. Read each statement, and decide whether or not it describes the way you think and feel about your dog, or the things you do either for your dog or together.

Under each statement is a range of numbers from 1 to 5. If you strongly agree that a statement describes your relationship, circle the number '5'; if it clearly does not describe your relationship, you might circle the number '1', showing that you strongly disagree. You might also feel less strongly about a statement, and circle one of the other numbers which show that you agree (4), disagree (2) or are neutral (3) about a statement.

Answer every question, even if some are hard to decide. Circle only one number under each statement. Remember, there are no right or wrong answers. Only you can tell us about your feelings, thoughts, and behaviors with your pet.

TOTAL SCORE: Raw Score_______ Percentile_______

CLUSTERS: I______ II________ III_______

Please circle the number that describes your relationship.
1=Strongly disagree
2=Disagree
3=Neutral
4=Agree
5=Strongly agree

---

1. I like teaching my dog things.
   1 2 3 4 5
2. I am the person in my family who usually walks my dog.
   1 2 3 4 5
3. I walk or exercise (e.g., ball, frisbee) my dog several times a week.
   1 2 3 4 5
4. Even if other family members are around, my dog lets me know when he/she wants to go outdoors or come in.
   1 2 3 4 5
5. I make sure my dog has fresh water all the time.
   1 2 3 4 5
6. I am responsible for feeding my dog on a daily basis.
   1 2 3 4 5
7. My dog is a nuisance.
   1 2 3 4 5
8. My dog often wants attention when I am too busy.
   1 2 3 4 5
9. My dog is very smart.
   1 2 3 4 5
10. My dog is dumb.
    1 2 3 4 5
11. I think my dog understands me.
    1 2 3 4 5
12. It feels good to talk to my dog.
    1 2 3 4 5
13. Sometimes, the things my dog does makes me laugh.
    1 2 3 4 5
14. My dog often comes to me for attention.
    1 2 3 4 5
15. My dog is very mischievous.
    1 2 3 4 5
16. I like taking care of my dog (e.g., daily routine).
    1 2 3 4 5
17. I do not like having to take care of my dog.
    1 2 3 4 5
18. I sometimes do things for my dog when I need to be doing something else.
    1 2 3 4 5

19. I feel responsible for my dog, and that is okay.
1 2 3 4 5

20. If my dog were to get lost, sick, or hurt I would feel very sad.
1 2 3 4 5

21. My dog means a lot to me.
1 2 3 4 5

22. I like to just 'hang out' or relax with my dog.
1 2 3 4 5

23. Just being with my dog makes me feel good.
1 2 3 4 5

24. My dog knows when I really feel sad, worried, or upset.
1 2 3 4 5

25. It makes me feel better to talk to my dog if I am sad, angry, worried or upset.
1 2 3 4 5

26. My dog does not seem to notice how I feel.
1 2 3 4 5

27. I miss my dog when we cannot be together.
1 2 3 4 5

28. My dog is a good buddy, or friend.
1 2 3 4 5

29. I like cuddling with my dog.
1 2 3 4 5

30. I make a point of spending time with my dog.
1 2 3 4 5

31. My dog helps me to feel good about myself.
1 2 3 4 5

32. I spend quite a bit of time with my dog.
1 2 3 4 5

33. I always wanted a dog.
1 2 3 4 5

34. My dog loves me unconditionally.
1 2 3 4 5

Appendix B

Interview Guide

I. Nature of relationship with the pet dog:

CHILD
a)What kinds of things do you like to do with your dog?
b)How often?
c)Do you have responsibility for feeding, walking, or cleaning up after your dog on a daily or regular basis?
d)Is this your decision, or part of household chores?
e)How long have you had your dog?
f)Does your dog have any health problems?

II. Impact of the dog on development self-esteem:

CHILD
a)How would you describe yourself?
b)How do you feel about yourself as a person?
c)Has this changed over the time you have had your dog?
d)Do you see your dog as a buddy or friend?
e)Do the things you do with your pet have anything to do with how you feel about yourself?
f)If so, how does your dog help you feel the way you do?
g)Are there some things that you do more because you have a dog (walking, meeting new people)?

PARENT
a)Has the dog had any influence on your child's self-esteem, or perception of his or her abilities? (Describe)
b)Does your child have any health problems or handicaps? (Describe)
c)Does the family dog have any health problems or handicaps? (Describe)
d)Has your child's involvement with the dog made a difference in terms of his physical, academic, abilities?
e)Have you noticed any difference in your child in terms of things like taking responsibility, or interest in others?

III. Relationship of the dog to level of felt competence:

CHILD
a)Are there things you feel you are more able to do because of your experiences with your dog? (Describe)
b)What have you learned from your dog?

PARENT
a)Has your child expressed more of a sense of feeling capable of trying new things (risk-taking) that might be attributable to his experiences with the dog?
b)Have you noticed a change in your child's level of confidence since you have had the dog?
c)Have there been any improvements to your child's physical abilities, academic achievement, or interpersonal behaviors, that you feel are in some way attributable to his relationship or experiences with the family dog? (Describe)

Appendix C
Behavior Observation Cue List

Eye contact:

- Dog-

- Child-

Physical Proximity:

- Initated by-

- Sought by-

- Duration-

Affection:

- Child responsive to dog's needs (water, out)-

- Child petting/interacting with dog-

- Child hugging dog-

- Nature of talk with the dog-

- Dog's response to the child's talk-

- Dog seeking interaction-

- Dog engaged in interaction-

- Dog cuddling up to child-

- Sensitivity to each other's needs (comfort, play)-

Respect:

- Response to commands-

- Nature of commands-

- Response to discipline-

- Nature/method of discipline-

Appendix D

Letter of Introduction

Thank you for taking the time to read this letter. I am asking for your assistance in a research project which I am conducting as part of my doctoral degree in Educational Psychology at the University of Alberta. I have chosen to study the relationship between children and their pet dogs.

The relationship is commonly referred to as human-animal bonding. There have been many articles written in both popular literature and scientific journals recently about the benefits of pets, especially dogs, in the lives of people. Most of these articles report on the observations of health care professionals and what they have seen when people interact with pets.

Some people believe that pets, and dogs in particular, might play an important role in the well-being of children. This is where you and your child are important to the research I am doing. I have compiled a list of potential subjects for my study. Specifically, subjects will be between the ages of eight and eighteen, have a dog as a family pet, and live at home with their parents.

If you are interested in becoming a participant in this study, I would like to interview you and your child. Your child would also be asked to complete a short questionnaire which examines about his or her thoughts, feelings, and activities in relation to your pet dog. The interviews and questionnaire will be completed in a visit to your home, and involve approximately one hour.

The purpose of this study is to explore and describe the relationship between children and their pets. The benefit to you and your family might be enhanced understanding of the role of your pet in your child's life, and a greater awareness of the dynamics and potential implications of human-animal bonding.

I am looking forward to talking with you, and will call you in about one week in anticipation of your assistance with this important study. If you have any questions, I would be pleased to hear from you. I can be reached at 463-3008.

Sincerely,

Eunice E. Johannson, PhD Candidate
Department of Educational Psychology
University of Alberta, Edmonton

Dr. Henry L. Janzen
Professor; Thesis Supervisor
Department of Educational Psychology
University of Alberta, Edmonton

Appendix E
Consent to Participate in Research

The purpose of this study is to explore the relationship between children, and their pet dogs, with particular attention to the development of psychological well-being of the child.

Each participant and his or her parent will be interviewed. The child (participant) is also asked to complete a questionnaire which asks about his or her thoughts, feelings, and activities in relation to the family dog. During the visit, observations will be noted regarding any behavioral interactions between your child and the pet. It is intended that through this process, we will obtain a better understanding of the human-animal bonding relationship, and its implications for wellness.

Your voluntary participation in this study is respected, and greatly appreciated. Information obtained from you will be kept confidential.

Eunice E. Johannson
Doctoral Candidate

Consent:

I have read this consent form, and understand the purpose, of the above-noted research. I agree to have my child participate, and to participate myself.

Date ____________________

Name of child ____

Name of Parent or Guardian ______________________________

Signature of Parent or Guardian ___________________________

Signature of Witness____________________________________

Appendix F

Reliability Analysis - Survey (Alpha)

Statistics for Survey:	Mean	Variance	Std. Dev.	N. of Variables
	146.4375	174.2303	13.1996	34

Item-total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-total Correlation	Alpha if Item Deleted
Q1	142.1964	165.0061	.4338	.8764
Q2	142.6875	159.8024	.4467	.8762
Q3	142.5893	157.1992	.5500	.8733
Q4	142.2946	166.5160	.2718	.8799
Q5	142.0179	164.6844	.4196	.8766
Q6	142.4107	160.4604	.4235	.8768
Q7R	142.0357	168.7014	.1840	.8818
Q8	143.4732	172.9903	-.0079	.8889
Q9	141.9018	164.8822	.4761	.8758
Q10R	141.7679	168.1078	.2905	.8790
Q11	142.2143	160.8726	.5132	.8745
Q12	141.8304	165.0791	.4900	.8757
Q13	141.6339	167.7837	.5209	.8766
Q14	141.8036	169.4746	.2897	.8790
Q15	143.4464	166.3394	.1550	.8870
Q16	142.2143	161.4492	.5460	.8740
Q17R	141.9911	166.2612	.2723	.8800
Q18	142.6518	157.6885	.5537	.8733
Q19	141.8304	164.4845	.5037	.8754
Q20	141.5000	171.9099	.3546	.8794
Q21	141.5536	168.8620	.5791	.8771
Q22	141.8304	163.9800	.6210	.8741
Q23	141.7232	165.4092	.6299	.8748
Q24	142.2946	162.9665	.4945	.8751
Q25	142.2589	159.1846	.6667	.8716
Q26R	142.3393	164.4424	.2862	.8805
Q27	142.1161	164.8423	.4425	.8763
Q28	141.7857	166.0978	.5366	.8757
Q29	141.8839	165.6531	.4342	.8765
Q30	142.000	162.3964	.6051	.8735
Q31	142.1696	161.6917	.5993	.8733
Q32	142.1786	160.5444	.6413	.8724
Q33	142.1429	164.9344	.3088	.8792
Q34	141.6696	170.0611	.2877	.8790

Reliability Analysis - Survey (Alpha)

Reliability Coefficients
N of Cases = 112.0   N of Items = 34
Alpha = .8803